THE GLOBAL UNIVERSITY

THE POLITICAL ECONOMY OF KNOWLEDGE IN ASIA
AND THE SEGMENTATION OF CHINA'S HIGHER EDUCATION

BY

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ABSTRACT

This research analyses the expansion and transformation of higher education in Asia, focusing in particular on Chinese universities. It shows the rising of the so-called global university, that is, above all, an inclusive process which makes academic knowledge production something heterogeneous, complex and composite – characterised by different actors both private and public, institutional and non-institutional. The global university is a point of multiplicity that places our view in the midst of the transformation of educational policies and knowledge taken as whole. It reveals a 'global knowledge order' parallel to a 'new international division of labour', where the higher education is becoming an important device in the filtering, restriction, and return of population and skilled workers around a whole set of internal national/transnational borders based on knowledge.

Developing the concepts of stratification and differentiation, I investigate how the transformation of the educational system brings out and multiplies, rather than mitigates, the differences between universities, while this same segmentation refers to an original and powerful method of management of the increasingly qualified workforce. Higher education and its internationalization nowadays is an important dispositive to segment population within globalization, reconfigures hierarchies and manages the complex displacement of the present having the same force (or even more) as those of gender and race. Moreover, the Global University represents the most interesting terrain to observe the development of an original measurement of labour in its metamorphosis and the value form in cognitive capitalism.

The growing intra-regional mobility in Asia and the internationalisation of higher education characterise the innovative cartography of the present, wherein knowledge production becomes spatially dispersed and globally integrated. Knowledge, geographically embedded, defines the order of the current post-colonial space, while the Global University describes not only this kind of order, but also how this imbalance is used by the skilled workforce to survive in the local labour market.

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Figure 1: The Map of China

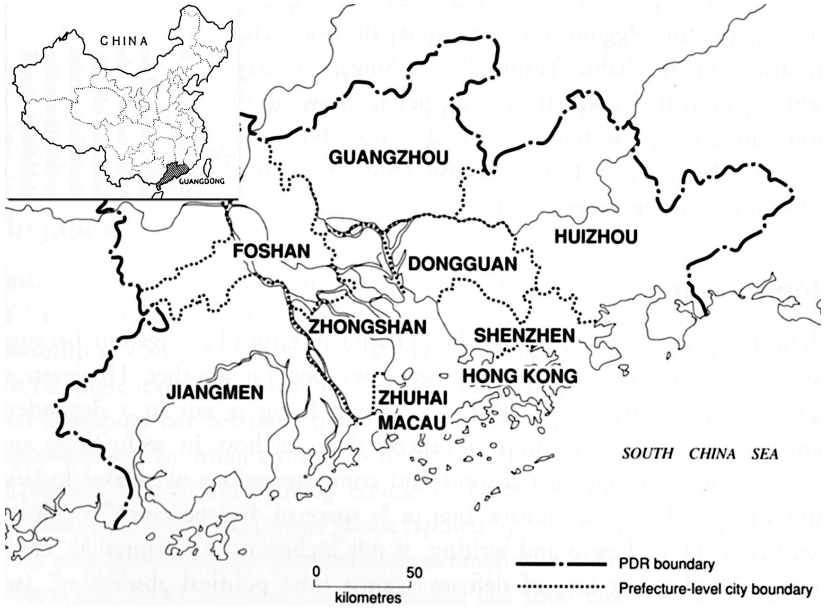

Figure 2: The Map of Guangdong Region and Hong Kong

INTRODUCTION

A NECESSARY IMPOSSIBILITY: THE MANY ASIAS OF LIVING RESEARCH

We must attempt to think it as one continent in its plurality,
rather than reduce it only to our own regional identity.
A necessary impossibility, if you like.
Or a perspective available only to the imagination,
though not to the understanding, which must go by way of regional identity.
(G.C. SPIVAK, 2007)

1. THE UNIVERSITY AND COGNITIVE CAPITALISM

Some say the university is becoming more like a global corporation, but in what follows I aim to show that the university is prefiguring the global economy, not just following it. Through an analysis of the university this research reverses the stereotypical and reassuring image of China. The image of China as a country able to copy but not innovate and culturally unable to occupy the sectors of high added value within global production is crumbling. Shanghai, Hong Kong, Beijing: in these cities I started the fieldwork that informs this thesis. I spent around one year in the Pacific region studying its university institutions: a privileged point of view from which to analyse the changes that occur in knowledge production, focusing in particular on China, considered the 'political and economic engine' of East Asia (WU, 2004; LI, 2008).

With the unprecedented boom of the Pacific Rim, defined by some scholars as a 'world region' (ARRIGHI, HAMASHITA, SELDEN, 2003), this thesis asks: how are higher education and its institutions changing? What modifications feature in the knowledge production of universities? Moreover, what role is education playing in its economic growth after the global financial crisis[1]?

[1] The Pacific region is identified as being the part of the World that according to some has the aim, or is destined according to others, to become the World's new economic and political powerhouse. This is a historic moment, a sign of the remarkable changes occurring at the global level, even more dramatic if one takes into account the productivity of labour and the quality of development faced by this region (Wu, 2008; 2004; DO, 2010). From the studies of Giovanni Arrighi (Arrighi, 1994; 2009; Arrighi, Hamashita, Selden, 2003; Arrighi, Silver, Ahmad, 1999) and scholars of the world-system analysis (Li 2008; Hung, 2009), the leading position of this region seems to be beyond a shadow of a doubt.
According to Giovanni Arrighi, Takeshi Hamashita and Mark Selden, this process began in the 1960s, and since then it has seemed unstoppable: 'the East Asian expansion since the 1960s stands out as a global shift of economic power with few precedents in world history. No shift of such proportions can occur without pauses and temporary setbacks, as witnessed by the US- centered Great Depression of the 1930s during the early twentieth-century global shift from Western Europe to North America. But pauses and setbacks should not prevent us from seeing the underlying trend' (Arrighi, Hamashita, Selden, 2003). The growth of the Pacific region has been understood as an exceptional case, where multinationals and an original model of capitalism would give life to a real 'economic miracle' (Wee, 2007). In 1993 the World Bank released its report called *The East Asian miracle* which stated: 'East Asia has a remarkable record of high and sustained economic growth. From 1965 to 1990 the twenty-three economies of East Asia grew faster than all other regions of the world. Most of this achievement is attributable to seemingly miraculous growth in just eight economies: Japan; the 'Four Tiger-Hong Kong, the Republic of Korea, Singapore, and Taiwan, China; and the three newly industrializing economies (NiEs) of South-east Asia, Indonesia, Malaysia, and Thailand'(World Bank, 1993). Since then, this Asian triumphalism seemed to be at least implicitly validated by that international organisation (Wee, 2007). The 'Asian miracle' becomes the linguistic code and the grammar of articles, papers and analyses about the economic growth of the Dragon as opposed to the Asian Tiger. In these discourses East Asia has been increasingly viewed as industrial, capitalist and urban – and committed to frenetic development (Wee, 2007): a sort of 'celebratory mantra' intoned for consecrating economic growth and capitalistic relations as foundation to understanding its sovereign assets as well as the social, historical and institutional aspects.

I tried to answer these questions by focusing on China: today, its impetuous growth seems to depend more and more on the high-tech segments of production, as well as on its ability to develop projects grounded on the knowledge-based economy (DO, 2010; ROSS, 2006; ZHOU, 2008). The so-called 'factory of the world', once the destination of low-tech production from advanced economies, is becoming increasingly sophisticated: from green technologies to the logistics of the bullet-train, from Lenovo to bioengineering and the financial services (WOODY, 2010) [2].

In this country the new Chinese 'Silicon Valley' (places such as Zhounghzou, Suzhou and Xi'an), the new financial district of Shanghai (which joins the existing one of Hong Kong) and its World Class University are leading these

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Nevertheless, scholars and studies have attempted to utilise the grammar of the 'Asian miracle' as a field to problematise these very ideas of Asia, its development and the concept of 'modernity' in general: I refer in particular to the recent studies by Kuan- Hsing Chen, Chua Beng Huat, Lau Kinchi, Hui Po Keung, Cheung Siu Keung, Naoki Sakai, Scott Cheshier, C.J.W.-L. Wee, Li Minqi among others.

This research attempts to fit into this analytical space, problematising what seem to be the most salient aspects of this growth through the lens of higher education and the emergence of a new governance of a skilled workforce.

[2] This is well represented by the new western multinationals that are moving important sectors of their commodity production and their most advanced research laboratories to China, attracted by its increasingly skilled workforce. Suzhou, that is the heart, the engine and the 'pool of ideas' of Shanghai, illustrates these changes well. In recent years this city has developed infrastructure to attract investors in the research of electronics, new materials, energy and biomedicine: a real hub of high-tech industries and a technological innovations basin. Moving towards western Asia there is Xian, where there is the new Chinese headquarters of the U.S. corporation Microsoft, which the multinational opened to hunt for high IQs on this side of the Pacific Ocean, thus making China the new base for research and development. Its first laboratory was set up in Haidian District, home for about forty universities and more than a hundred scientific institutions, the basin of nearly one million Chinese scientists and engineers. Beside Microsoft there is Oracle, which has launched a Linux development lab in Beijing, followed by companies like Motorola, Siemens, IBM, Nokia and Intel, while the U.S. automaker General Motors has opened its design centre in Shanghai (Do, 2010).

rapid transformations alongside factories and industrial districts the working conditions of which recall more the first industrial revolution in Manchester than what might be expected in the twenty-first century.

In the next pages, I will describe the progressive shift from 'made in China' to 'created in China', which reveals a 'global knowledge order' parallel to a 'new international division of labour', and thus unfolds a sort of *exposition universelle* of the different labour regimes that characterise what has been defined as cognitive capitalism.

The category of cognitive capitalism[3] was elaborated in the 1990s by scholars in France and Italy such as Carlo Vercellone, Yann Moulier Boutang and Antonella Corsani among others, in the journals *Multitude* in France and *Posse* in Italy. In particular Carlo Vercellone elaborated a theory of historical time, stressing the centrality of knowledge to the long-term dynamics of capital. According to this theory:

> cognitive capitalism is useful in crafting a theoretical reconstruction in historical time which is able to identify the significance of the current turning point in the dynamic of capitalism in the longue durée. From this results a periodization in which three principal stages of the capitalist division of labour and of the role of knowledge can be identified. (VERCELLONE, 2007)

[3] The name of 'cognitive capitalism' used by this research, refers to the dialectic relationship of its elements. According to Carlo Vercellone the word 'capitalism' defines the enduring element in the change of the structural invariants of the capitalist mode of production: in particular, the driving role of profit and the wage relation or, more precisely, the different forms of dependent labour on which the extraction of surplus labour is founded. The word 'cognitive' emphasises the new nature of the conflictual relation of capital and labour, and of the forms of property on which the accumulation of capital rests (Vercellone, 2007).

Following this proposition it is possible to identify three stages in the capitalist division of labour in respect to the role of knowledge. The first is:

> the stage of formal subsumption [that] develops between the beginning of the sixteenth and the end of the eighteenth century. It is based on the models of production of the putting-out system and of centralised manufacture. The relation of capital/labour is marked by the hegemony of the knowledge of craftsmen and of workers with a trade, and by the pre-eminence of the mechanism of accumulation of a mercantile and financial type. (VERCELLONE, 2007)

The second is:

> the stage of real subsumption [that] starts with the first industrial revolution. The division of labour is characterised by a process of polarisation of knowledge which is expressed in the parcelling-out and disqualification of the labour of execution and in the overqualification of a minoritarian component of labour power, destined to intellectual functions. The attempt to save time, founded on the law of value-labour, is accompanied by the reduction of complex labour into simple labour and by the incorporation of knowledge in fixed capital and in the organisation of the firm. (VERCELLONE, 2007)

Finally, the third stage in Vercellone's hypothesis:

> begins with the social crisis of Fordism and of the Smithian division of labour. The relation of capital to labour is marked by the hegemony of knowledge, by a diffuse intellectuality, and by the driving role of the production of knowledge by means of knowledge connected to the increasingly immaterial and cognitive character of labour. This new

> phase of the division of labour is accompanied by the crisis of the law of value-labour and by the strong return of mercantile and financial mechanisms of accumulation. The principal elements of this new configuration of capitalism and of the conflicts that derive from it are, in large measure, anticipated by Marx's notion of the general intellect. (VERCELLONE, 2007)

Starting from this theoretical framework of the change in the capital/labour relation, the cases of Asia in general and China in particular support the view that these three different layers do not represent a temporal linear sequence or a chronological series, but a synchronic intersection.

In this research I perform a partial syncretism that transforms this sort of evolution into a heterogeneous coexistence of different capital relations. It is the coexistence of these particular elements, instead of their temporal linear sequence, that characterises the geography of the contemporary relations of capital in East Asia (and at the global level in general). East Asia, far from being characterised by homogeneity, is profoundly heterogeneous, both in its spatial and temporal axis. In this way capital itself, affirming its command, works through the articulation and *assemblage*[4] of different spaces and times through which it is possible to perceive what Ahiwa Ong defines as *post-developmentalism*:

[4] The term 'assemblage' comes from a study by Stephen J. Collier and Aihwa Ong (2008) in which they claim, in relation to the global, the assemblage is not a locality to which broader forces are counterposed. Instead, an assemblage is the product of multiple determinations that are not reducible to a single logic. The temporality of an assemblage is emergent: it does not always involve new forms, but forms that are shifting, 'in formation, or at stake'. The term 'assemblage' implies a heterogeneity, contingent and unstable temporality of surfacing, whereas global refers to an inherent and seamless tension. It is a dynamic concept that I would use here to reconceptualise the process of economic globalisation through the trasnationalisation of higher education as a concrete economic complex partly situated in a specific place.

> a more dispersed strategy that does not treat the national territory as a uniform political space. Market driven logic induces the coordination of political policies with the corporate interests, so that developmental decisions favour the fragmentation of the national space into various non contiguous zones, and promote the differential regulation of a population who can be connected to or disconnected from global circuits of capital. (ONG, 2006)

This scenario, constituted by delocalisation, transnational education and export orientation as well as a multiplicity of modes of work, results in a sort of geographic coexistence of low and high intensity value extraction. At the same time there is no lack of differentiation among different forms of surplus extraction, nor is the end of inequality in sight.

In fact, with the coexistence of different labour regimes that this thesis identifies, heterogeneity appears to be what makes it possible to distinguish how low-value sectors can be defined as a function of the high added-value segments. Reshaping the temporal and chronological axis into a synchronic horizon does not mean that heterogeneous is synonymous with differentiation, where one could be a substitute for another: in coexistence and co-presence, indistinction doesn't mean the impossibility of making a distinction.

So it is possible to observe how a particular sector of production is organised by the timing and needs of another one: my research focuses on how so-called immaterial labour shapes and ranks so-called neo-Taylorist occupations. This investigation into knowledge production in general and the university in particular, considers them as part of

> the particular branch of production which determines the position and importance of all the others […]. It is as *though light* of a particular hue were cast upon everything, tingeing all other colours and modifying their specific features; or as if a special ether determined the specific gravity of everything found in it. (MARX, 1971; emphasis mine)

So did Marx describe it in his *Introduction to a contribution to the Critique of Political Economy* of 1879. Using the 'though light' of higher education, I will enter the different zones of relative and absolute surplus value, real and formal subsumption, frictions, differential inclusion and the new hierarchies of the workforces that are the general framework of this research.

Some say that looking at cognitive capitalism is Eurocentric but I hope to show that this accusation itself is a Eurocentric position: the hypothesis of cognitive capitalism is useful to describe the progressive dissolution of the classical geography that had found, in the rigid division between the West/the rest, rather than the centre/periphery dichotomy, the conceptual means to understand the international division of labour and its asymmetries on a global scale.

Talking about Asia in general and China in particular, I will argue that we must replace the classical idea of unity and space-time homogeneity inherent to the Western nation-state. Far from being homogeneous, the size of this sub-continental country makes it deeply diverse, both in its spatial and temporal dimensions (JACQUES, 2009).

The discontinuity that characterises China reveals the power relations defined by global capital in recent years, which have shaped the internal geography of this society through the delocalisation and relocation of

multinationals (HUNG, 2009). This is well represented by the so-called 'technology zones', zones of exception where, since the early 1980s, Western multinationals have relocated 'mass production products, at first simple ones, like apparel and toys, and then more complex ones, like automobiles and computers' (ADAMS, 2006). They are special zones that circumscribe the space and population where the Chinese nation state's unity is transformed by the action of 'neoliberalism as exception'. As Ahiwa Ong wrote:

> the 'Zoning Technologies' refers to political plans that rezone the national territory. The technologies of governing are the instrumentalization of a form of market driven rationality that demark spaces, usually nonadjacent to each other, in order to capitalize on specific location's advantages on economic flows, activities and linkages. By developing zoning strategies, sovereign states can create or accommodate islands of distinct governing regimes within the broader landscape of normalized rule. The political outcome is an archipelago of enclaves, the sum of which is a form of variegation sovereignty. (ONG, 2006)

These relocation practices as well as the increasing mobility of labour, institutions of higher education and financial flows have created economic and political exceptions that have turned China into the newly emerging leading country of the global economy in only thirty years (CHI LO, 2007; SCHIERE, 2010; WU, 2004).

What are the historical, social and political elements that led to the current situation? What kinds of forces were capable of such transformation?

It could be argued that the current picture, rather than being produced by capital's need and its internal logic, is the result of struggles within capitalist

social relations. The general assumption behind the research presented here is not that these changes are the mere result of capitalism imposing its needs, but that this process can also be understood through the dialectics between global struggle and capital. This point of view recalls the so-called 'Copernican revolution' of a current of modern Italian thought termed *Operaismo*[5], which overturned the standpoint of how we see the social relation between capitalist development and workers' struggles and is aptly summarised in this passage from *Lenin in England* written by Mario Tronti:

> We too have worked with a concept that puts capitalist development first and workers second. This is a mistake. And now we have to turn the problem on its head, reverse the polarity, and start again from the beginning: and the beginning is the class struggle of the working class. At the level of socially developed capital, capitalist development becomes subordinated to working class struggles; it follows behind them, and they set the pace to which the political mechanisms of capital's own reproduction must be tuned. (TRONTI, 1971)

From this point of view it could be argued that the failure of the classical framework of a dialectics between centre and periphery within cognitive capitalism was first revealed by the global movement of 1968-69. The 1968

[5] Operaismo (workerism) is a current of thought of Italian Marxism born in the 1960s around the magazines 'Quaderni Rossi' and 'Classe Operaia'. The analysis of class composition and the use of 'inchiesta operaia' and 'conricerca' as dispositives of political organization are the most significant elements of this movement. The critique of political economy as a science of class struggle and the theory of the refusal of work are considered its most significant contributions. The leading figures of this political movement are: Antonio Negri, Mario Tronti, Raniero Panzieri, Sergio Bologna, Christian Marazzi, Franco Berardi Bifo, Paolo Virno and Carlo Vercellone. Introductory level texts about operaismo are: Antonio Negri (2007), Steve Wright (2002); Paolo Virno, Michael Hardt (2006) and Francois Matheron (www.generation-online.org/t/toperaismo.htm).

student movement embodied a deep epistemological discontinuity, able to break the classical geographical divide between coloniser and colonised inherited from western imperialism:

> as an event, 1968 has long since ended. It was one of the great, formative events in the history of our modern world-system, the kind we call watershed events. (WALLERSTEIN, ZUKIN, 1989)

The dis-articulation of the classical relationship between *the West* and *the rest* could be understood as the effect of this first student's global protest, as affirmed also by Giovanni Arrighi, Takeshi Hamashita and Mark Selden:

> the history of the capitalist world-economy since 1973 has been the history of its adjustment to the social upheavals of the previous five years. (ARRIGHI, HOPKINS, WALLERSTEIN, 1989)[6]

From Berkeley to Tokyo and Mexico City, from the Prague Spring to the Chinese Cultural Revolution, from the May uprising in France and the Italian movement, the 1968 social unrest was immediately visible and global, *transversal* across the so-called First and Third worlds, spreading across the colonised and colonial countries.

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[6] In the same vein Michael Hardt and Antonio Negri have stressed the importance of the social movements of 1968-69 to deciphering the current global scenario: 'Since the controls provided by Bretton Woods made the dollar de facto inconvertible, the monetary mediation of international production and trade developed through a phase characterized by the relatively free circulation of capital, the construction of a strong Eurodollar market, and the fixing of political parity more or less everywhere in the dominant countries. The explosion of 1968 in Europe, the United States, and Japan, coupled with the Vietnamese military victory over the United States, however, completely dissolved this provisory stabilization' (Hardt, Negri, 2000).

This global experience created a discontinuity, breaking the rigid division between different areas and regions segmented by the 'iron curtain' of the cold war and the 'heritage' of imperialism. Within this heuristic overturn, resistance becomes ontologically anterior to the political responses of capital. This movement was the 'expected unexpected,' able to redefine the geopolitical *in fieri* due to its rapid spread and unpredictability:

> When 1968 exploded - in Columbia University, in Paris, in Prague, in Mexico City and Tokyo, in the Italian October - it was an explosion […] very powerful, shattering many authority relations, and shattering above all the Cold War consensus on both sides. (ARRIGHI, HOPKINS, WALLERSTEIN, 1989)

However, this global event did not limit itself to only dissolving the old world order: this student movement posed the importance of the centrality of the university, while the figure of the student forced 'a high social value to be accorded to knowledge and intellectual labour' (HARDT, NEGRI, 2000). In a nutshell it anticipated the centrality of knowledge as a strategic resource for capitalistic valorisation, thus deeply changing the character of knowledge production in the academia: the university became increasingly central whilst the very activity of learning was being transformed into a means of production. This point is also underlined by Michael Hardt and Antonio Negri, who criticise the 'extremely limited' analyses of the social movements of the 1960s, and particularly 1968 because:

> they fail to recognize the profound economic power of the cultural movements, or really the increasing indistinguishability of economic and cultural phenomena. (HARDT, NEGRI, 2000)

At the same time, however, increasingly transnational and immaterial capital has displaced workforce management and the asymmetries of its command into knowledge production, thus reshaping its hierarchical system into a new original order at the global level. While the classical articulation between West/East and centre/periphery was being eroded through the student movements of 1968, the very emergence of knowledge created an original horizon in which the hierarchies of the past were dislocated and begun to assume new forms: the previous divisions have not disappeared nor have they been annulled, but they are redefined and maintained in a new framework that I aim to explore in this research.

My hypothesis is that the classical colonial divide has been morphed into a multiplication of centres and displaced into a fragmented geography of asymmetrical relations that are managed through knowledge production and educational institutions. In what follows I will briefly situate my approach in relation to existing analytical frameworks, introduce my methodology, and present a brief summary of chapters.

2. *LIVING RESEARCH* AND THE FRAMEWORK OF ANALYSIS: FROM THE IDEA OF 'CONVERGENCE' TO 'EMERGENCE'

The twin towers of former Malaysian prime minister Dr. Mahathir Mohamad's Petronas Centre in Kuala Lumpur – with its architectural gestures towards Islamic sources, the world's tallest building until 2004 – make a statement about being successful counterplayers in a post-Kiplingesque Great Game of global as simple recipients of World Bank aid.
We can play up, and play the game!
(C.J. W. –L. WEE, 2007)

Boston is the Hong Kong of the West.
(TONY R. EASTHAM, 2011)

This investigation undertakes a study of the transformation of higher education and knowledge production, its progressive internationalisation, expansion and importance in Asia, a subject which has already received considerable theoretical and analytical attention[7] (ALTBACH, 1998; ARNOVE, ALTBACH, GAIL, 1992; CROSSLEY, WATSON, 2003; PHILLIPS, SCHWEISFURTH, 2006; CROSSLEY, 2007; ARNOVE, TORRES, 2007; SHAVIT, ARUM, GAMORAN, MENACHEM, 2007). I have started my research studying this literature, although I focus exclusively on East Asia in general and particularly on China and Hong Kong; this is because my attempt is to observe the changes in this region through the lens of globalisation using a methodology capable

[7] Moreover several international projects of investigation on this issue should be mentioned: I refer in particular to the Quarterly journal 'Higher Education Policy' of the International Association of Universities (IAU: www.iau-aiu.net); the journal and publications of the Center for International Higher of Boston College, whose director is Philip G. Altbach (www.bc.edu/research/cihe); the online project University World News and the GlobalHigherEd weblog edited by Kris Olds and Susan Robertson.

of observing specific transformations and avoiding the classical counterposition between the global and local levels. In other words, I adopted a precise methodology to understand the global present, adequate to making generalisations based on specific differences and, at the same time, capable of individualising singular differences by generalisations.

This approach avoids the comparative analysis of the transformation of education that understands it as a gradual homogenisation of historical, social and cultural differences; this is what I would call the 'convergence' approach. Many studies describe the worldwide changes within academia as a progressive standardisation of knowledge production: in this regard Brett de Bary mentioned a sort of 'global homogeneity' of the 'policy discourse of higher education reforms' (DE BARY, 2010). De Bary, describing the transformations of universities in different countries,[8] states:

> the growing global conformity in the legal, economic, and curricula imperatives addressed to institutions of higher education bears out the inevitable 'time-space compression' entailed in the neoliberal tenet that 'the social good will be maximized by maximizing the reach and frequency of market transaction' according to David Harvey's oft-cited formulation. (DE BARY, 2010)

The analytical idea behind these studies appears to contain a view of contemporary global relations that considers 'time' and 'space' to be smooth, empty and homogeneous dimensions, simple axes of the accumulation process (CHAKRABARTY, 2008). Similarly the concept of modernity is widely

[8] The countries are: China, France, Germany, Hong Kong, Japan, Korea, Mexico, Russia, Scotland, Singapore, Taiwan, and the United States.

regarded as a chronocentric concept that posits a linear, teleological path of 'development' (KRISHNASWAMY, HAWLEY, 2008; SANYAL, 2007).

This kind of approach is not new, in fact it was already present in the science of classical political economy when observing the geographical areas alternative to 'the West': this is the case in the stadial analysis of growth proposed by Adam Smith in his 'The Wealth of Nations', rather than August Comte, Saint Simon and the *de te fabula narratur* of Karl Marx about the effects of colonial command outside 'old Europe' (FERRARI BRAVO, 2001). Focusing on higher education, some studies describe its changes in non-Western or non-European countries as a *transition* from an 'inadequate' national educational system towards another 'more advanced' one (SANYAL, 2007). The process is described as partial and driven by the idea of modernisation through different historical stages of development that considers the Anglo Saxon and European stage to be the final and ultimate step. The 'convergence' approach draws much on contemporary literature that, particularly in Asia, understands educational changes as synonymous with its 'westernisation' while the meaning of modernity is nothing more than 'Americanisation' or 'Europisation' (DE BARY, 2010). The changes to knowledge are seen through the lens of its 'corporatisation', while the achievement of the 'university of excellence' is associated with the American or the Ango-Saxon model: the 'best way' for rationalising production at the global level. As affirmed by Lei QiLi:

> the primary task for liberal education in China is to face the powerful impact of the globalizing and the corporatized 'university of excellence' in which the model of American university is being invoked to rationalize and standardize university education. We will have to realize that one of the

> most disturbing results of globalization is the standardization and homogenization of cultures. (QILI, 2010)

This kind of approach, common to several comparative studies, describes the global space as the result of a 'convergence' process, that is the 'progressive and tendential reduction of differences towards some uniformity level' (FERRARI BRAVO, 2001).

According to Luciano Ferrari Bravo this convergence requires, first of all, an internal logic to explain this trend as endogenous when referring to capitalistic valorisation (FERRARI BRAVO, 2001). Moreover the same ratio assumes a progressive approximation towards a unique, 'universal' and well-defined model embodied by one (or more) societies involved in the process: in the case of higher education represented by Anglo-Saxon and American societies. Thus often the university system of Asia is defined simply in relation to the elements that are similar and comparable to the 'golden standard' of 'the West', this latter considered as the basis on which to compare any changes and metamorphoses.

From this point of view it could be argued that, in a certain sense, the logic of these comparative analyses recalls the Weberian ideal-type, which describes the object of study based on whether it is close or distant to the reference model taken into consideration:

> An ideal type is formed by the one-sided accentuation of one or more points of view and by the synthesis of a great many diffuse, discrete, more or less present and occasionally absent concrete individual phenomena, which are arranged according to those one-sidedly emphasized viewpoints into a unified analytical construct. In its conceptual purity, this mental construct (Gedankenbild) cannot be found empirically anywhere in reality. It is a

> utopia. Historical research faces the task of determining in each individual case, the extent to which this ideal-construct approximates to or diverges from reality [...] (WEBER, 1949)

Several analyses of the transformation of higher education in Asia assume the model of knowledge production of the West both as a measuring instrument and a point of reference: in other words it is a sort of ideal-type that relegates the necessary differences into *a posteriori* speculation, based on deviations from defined patterns.

It could be affirmed that these comparative studies denote a strange interweaving between Weber's methodology and the teleological and Eurocentric idea of transformation.

However, the changes we are experiencing require a new logic and new methodological resources to examine the global space beyond the classical dichotomies of modernity: the West/East, North/South rather than tradition/modernity or the opposite identities that are first of all historical and political. In Asia the dynamic field of postcolonial studies has broken the 'analytical impasse' of this kind of comparative research in a productive way. I have oriented the methodology of my research exactly towards those references in order to understand the transformation of higher education in East Asia. In avoiding the ratio of 'convergence' whilst maintaining a global view of analysis, I have utilised two strategies from this field.

The first is the deconstructive method of Naoki Sakai, able to dislocate the notion of West (SAKAI, 1997; 2001; 2006): according to him the concept of the West cannot refer to a specific geographical definition. Recalling Antonio Gramsci, this author states:

> there cannot be any inherent reason why a certain geographical area should be designated as the West. In principle, every point on the earth could have its own west [...] The West has received its legitimacy through the hegemonic configuration of the world. The location of the West can never be divorced from the question of who came to dominate the modern world, argued Gramsci. (SAKAI, 2001)

So, first of all the notion of the West is not a geographical concept, but refers to something that is historical and has to do with hegemony and power relationships never given once and for all. In the same vein, C. J. W. –L. Wee argued, that economic and political power has shifted away from a geographical location called the 'West' to a less identifiable position in the 'globe' (WEE, 2007). 'The dispersal of the "West" into the "globe" represents a partial decentring of the West – never a unified entity to begin with' (WEE, 2007): the West, considered as a power relationship, is not homogeneous but is a composition of many variables, none of them remaining constant. For that reason the notion of the West 'can never be a unity: it is a composite or assemblage of disparate contexts' (SAKAI, 2000). From the *binary contraposition* to a *multiple dislocation*: the idea of the West and its opposite (whether 'the East' or 'the rest') becomes a relational concept that, rather than designating a bounded physical territory, expresses the gradient and the vertical positions of subjects-in-relation:

> Though it is generally believed to designate a place, the West is a name whose indexing function is evoked in order to spatially represent a particular social relationship which exists say between the colonizer and the

> native, the educated upper class elite and the peasants from the countryside. (SAKAI, 2000)

As such, I research the concept of the West and the East as a hierarchical relationship that is asymmetrical and geographically displaced.

From this point of view it is possible to analyse the transformation of higher education at the global level, the issue of stratification and segmentation as re-articulating the distinction between the West and the rest, observing traces of 'the West' *in* 'the rest' and vice versa.

The second approach that inspires my investigation comes from the methodology of *Asia as method* proposed by Kuan-Hsing Chen.[9] This author, echoing the research of Ashis Nandy on Indian modernity (NANDY, 1980) suggests to consider the West:

> as bits and fragments that intervene in local social formations in a systematic, but never totalizing, way. The local formation of modernity carries important elements of the West, but it is not fully enveloped by it. Once recognized the West as fragments internal to the local, we no longer consider it as an opposing entity but rather as one cultural resource among many others. […] In the form of *fragmented pieces*, the West has entered our history and become part of it, but not in a totalizing manner. The task of Asia as method is to multiply frames of reference in our subjectivity and worldview; so that our anxiety over the West can be diluted, and productive critical work can move forward. (CHEN, 2010; emphasis mine)

[9] Kuan-Hsing Chen takes this name from Takeuchi Yoshimi's 1960 'Asia as method' lecture. Reading 'Asia as method' 50 years after its production, he discovers that the current crisis of our conditions of knowledge have not yet gone beyond Takeuchi's problematic. Intellectual circles in East Asia are still operating within the 'catch up' mode in a binary opposition between Euro-American theory and Asian empirical reality.

Therefore, this strategy proposed by Kuan-Hsing Chen and Ashis Nandy makes it possible to break the unity and uniformity of both the West and the East, showing that instead of being opposed, this same relationship is constituted by 'bits and fragments'. Taking into account this inspiring suggestion, I will consider these 'fragmented pieces' proposed by Kuan-Hsing Chen as *variables* with which to observe the transformation of higher education in East Asia.

The deconstruction, dislocation and fragmentation approaches mentioned above are like the warp and the weft of this research, and enable us to adopt methodologies of research alternative to the 'convergence' exposed above. Furthermore, this research is close to the analysis proposed by the classic sociologist Emile Durkheim and his idea of 'social species' (RAGIN, ZARET, 1983). In his *Rules of sociological method* Emile Durkheim states that 'species attributes' are more permanent than mere 'historical phases', such as those defined by different economic systems: 'a species defines itself by more constant characteristics' (DURKHEIM, 1964). Although this issue appears archaic and far-removed from current methodological issues, according to Charles Ragin and David Zaret:

> it contains a number of modern presuppositions. That different species are objectively distinct and finite presupposes that their internal relations are determined by their mode of aggregation, that their attributes *emerge* from the combination of their component parts. The assumption that empirically distinct species exist due to different modes of aggregation relies on the concept of hierarchical emergence. (RAGIN, ZARET, 1983)

Combining the methodological assumption of Kuan-Hsing Chen, Naoki Sakai and what I have reprised from Emile Durkheim, it is possible to observe the changes of higher education system and university as the emerging aggregation of displaced 'bits and fragments' that refers to asymmetries and differentiated global positions. Instead of focusing on the convergence, my research observes changes in higher education as the *emergence* of a new systemic network of relationships. *From convergence to emergence*: the strategic effort of this methodology consists in its ability to understand the changes as emerging proprieties among the 'pieces and fragments' in a heterogeneous space instead of a transition from an 'underdeveloped' stage to another one considered superior.

From that point of view, the transformation of higher education in East Asia does not refer to a 'global homogeneity', nor to a sort of 'neo-colonialism of the West' (CHEN, 2010); quite the opposite, it involves the possibility to go beyond the Pacific region as well as beyond the European and American university system towards a new regime of knowledge production. The changes of the educational system in Asia are not analysed like a 'mimicry' of the 'golden standard' of the 'Oxbrige' model. It is in fact quite the opposite, it is a problematisation of the same western university as well as the ideas of *development*, *progress* and *globalisation*. This study into higher education reveals a new set of emerging interactions irreducible to the mirroring identity of the West and the East as well as of Europe and Asia. Something new is produced between non-localisable connections, actions at a distance, systems of replay, resonances and echoes, 'objective chances, signs, signals and roles which transcend spatial locations and temporal successions' (DELEUZE, 2004): this something new is what I call the global university.

This research focuses on China and its qualitative and quantitative changes, while Hong Kong, which plays an important role in my investigation, brings us to the complex mosaic of the Pacific Rim. This special administrative region on the one hand introduces the issue of post-colonialism in this research, hence specifying the temporality of this work; on the other hand, through the definition of the Regional Hub of Education (RHE), it enables us to observe the transformation of higher education in a regional and dynamic perspective throughout the whole of Asia, from South to North.

The principal instrument I have used to collect data is the interview, diversified depending on the context and people questioned: social actors considered competent and appropriate in the field of higher education who had or have a leading role in its current transformation.[10]

The mode of interview used is 'semi-structured': a partly regulated dialogue based on flexible prompts and schema that are not strictly standardised.

I chose this kind of instrument because it is hybrid: its structured form guarantees that all respondents (grouped by type and field) were asked the same question in the same way and sequence (preserving the invariance of the stimulus). Furthermore the interviews collected among the academic workforce were conducted inside offices rather than university cafés, thus allowing for a higher standardisation of environmental factors to the relationships in the interviews. This also enabled me to observe the social actors in their working environment, grasping information about their job beyond the recorded data. In this way I have not only seen people *in situ*, but

[10] However, not all the materials collected are part of this research: only a selection of them, around 40-50 per cent, were subsequently reported in the final form of this research that I present here (for the complete list of interviews collected in this study and the interview's schema see the document A.1 in Appendix).

I also explored the same social and physical context of their work, the formal and informal social interactions among colleagues which I have considered an integral part of my research.

The advantage of using a hybrid instrument was the flexibility of the pre-established scheme of the interview, which gave me the opportunity to develop potentially relevant topics that emerged during the dialogue. The schema I have prepared was useful to list the issues I wanted to ask about and discuss; however, the orders in which they were examined and the questions formulated were relatively open, determined by my evaluations during the meeting. With the 'semi-structured' model I had the opportunity to easily design the conversation, modelling the interview and posing questions with the most suitable words and tones depending on whom I was talking to, and asking for clarification and/or further details.

Most of the interviews collected were organised by a preliminary and exploratory meeting: a conversation without recording, which usually took place during a lunch or over a coffee. The aim was to increase the 'relational density' between the interviewed and the interviewer, establishing a high degree of trust, a peer relationship to allow the emergence of elements that were not only descriptive, but also problematic and critical of their work.

This methodology recalls what Mark Benney and Everett C. Hughes wrote about the interview, describing it as 'a relatively new kind of encountering the history of human relations' (BENNEY, HUGHES, 1956). Moreover, these two scholars wrote that it is more than a tool of study:

> it is the art of sociological sociability, the game which we play for the pleasure of savoring its subtleties. It is our flirtation with life, our eternal affair, played hard and to win, but played with that detachment and

> amusement which give us, win or lose, the spirit to rise up and interview again and again'. [...]
>
> True, the interview tends toward the form of the sociable conversation, in that, once the interviewer has been 'cued' to the level of discourse a given respondent is capable of, and has adapted himself to it, communication is expected to approximate that which would take place between actual equals, so that the information carried away is assumed to be such as a man might give when talking freely to a friend. (BENNEY, HUGHES, 1956)

On several occasions the relationship continued beyond the recorded dialogue, with other appointments and further invitations to discuss together with other colleagues of the same university.

Very often the research was transformed into a 'co-research' underlining the collective aspect of knowing. This method was adopted in my research but originated in the Italian melieu of political militants' inquiries with workers in the Italian factories during the 1960s and 1970s.[11]

[11] The idea of 'co-research', that is to say, a form of research that tears down the division between the subject-researcher and object-researched, is very close to the research methodology developed in the United States in the 1950s, in particular in Elton Mayo's sociologist focus on human groups as a specific field of sociological inquiry. According to Marta Malo de Molina, the Italian Alessandro Pizzorno, after importing it to Europe, helped to develop its politicised dimension. Pizzorno, together with a group of Italian militant-intellectuals, (including Romano Alquati and Danilo Montaldi) would begin to transform and radicalise these methods between 1966 and 1967 applying them practically to struggles in the province of Cremona (Malo de Molina, 2004). For Marta Malo de Molina during these years, the use of worker inquiry and co-research spreads under different formats: 'it was used as a device to analyse forms of exploitation in the factory and neighbourhoods, as well as a mechanism to track forms of insubordination by teams from journals such as 'Quaderni Rossi' and 'Quaderni del territorio' (Italy). However on many occasions, these techniques were driven by workers' spaces themselves, in a more or less flexible way, without the intervention from theoreticians or 'experts' external to the processes of self-organisation. These techniques were used as methods to construct platforms for struggle' (Malo de Molina, 2004). This is very close to the idea of 'militant inquiry', which involves knowledge production as a relationship, i.e. its object is to produce knowledge in relationship with

Data collected in this study come also from notes, recordings and conversations during the fieldwork. I spent about one year living in East and South Asia between the universities of Hong Kong, Xiamen, Guangzhou, Shenzhen, Shanghai, Ningbo, Beijing and Singapore. In these cities I had the opportunity to explore and study many campuses as well as national and international universities, both private and public.

At Hong Kong I visited and studied at the Hong Kong University (HKU), the Chinese University of Hong Kong (CHKU), the City University of Hong Kong (HKCU) and Lingnan University. Moreover I was a visiting researcher at the Shue Yan University (SYHKU), the only private university of Hong Kong: a really privileged point of view from which to observe the tendencies and the contradictions of higher education in this city-state.

At Xiamen I had the opportunity to explore Xiamen University and its new campus established in the development zone of the region, while at Shanghai I spent time at the Jiao Tong University studying the research

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other people. According to Nate Holdren: 'the aims of militant research are internal to the political position of which the militants are militants. The knowledge produced as well as the relationships - the individual and collective subjectivities - produced in militant research are bound up with the militant political project. This project is the primary goal of militant research, and provides the criterion for assessing and reflecting upon the outcomes of any instance of militant research' (Holdren, 2006).

Operaismo utilised the practice of co-research to identifying levels of consciousness and awareness among workers of the processes in which they, as productive subjects, were engaged. In this vein, Antonio Negri says the following about this method: 'If I go into a factory, get in touch with the workers and carry out with them an investigation into the conditions of their labour, the joint-research is obviously the description of the productive cycle and the identification of the functions of each person within that cycle. But at the same time, it is also a general evaluation of the levels of exploitation that each and every one of them suffers, of the workers' ability to react in relation to the consciousness of their exploitation in the system of machines and before the structure of command' (Negri, 2003).

centre of the Academic Ranking World University (ARWU). Moreover, I visited and gave a lecture at Shanghai University.

In Ningbo I conducted interviews among the academic workers of the international branch of the University of Nottingham Ningbo and its Centre for Sustainable Energy Technologies (CSET).

In Singapore and Beijing I interviewed workers of the private company Thomson Reuters, studying the project ISI-TR and its evaluation systems of academic labour based on citation analysis and scientometrics.

Finally, at Guangzhou and Shenzhen as well as in Hong Kong, I investigated the workers struggles that erupted at the Honda and Foxconn factories in June 2010, while I was in the South of China (in the region of the Guangdong).

This research is a result of a full immersion in the field based on the assumption that today it is not possible to understand the present we are living without experiencing an intensive approach to researching.

While Karl Marx in the *Einleitung* identified the 'determinate abstraction' and the 'abstract activity of thought' as the first element of the methodology for the critique of political economy, today:

> the problem is that it is no longer possible to start from the determinate abstraction, that is from the formation of concepts as an autonomous activity that is scientific and independent, but rather we needed to move within a pervasive historical experience, measuring ourselves up against that constant jolt made of causes and repercussions, […] events and unexpected emergencies, that characterizes the historical styles of postmodernity. (NEGRI, 2003)[12]

[12] Translation mine. Here the original Italian: *il problema consiste nel fatto che non era più possibile partire dalla astrazione determinata, ovvero dalla formazione del concetto come attività*

Nowadays it seems that reflexive ethnography and co-research, based on the direct experience of researchers, are the most adequate instruments to re-invent and re-focus the Marxian analysis of political economy. Fieldwork develops social relationships and cooperative networks, renews the method of the critique of political economy and re-invents it as *living research*[13], which places in tension some of the classical assumptions of scientific research primarily based on the clear separation between theory and practice as well as between subject and object of research (PANZIERI, 1994; CORBETTA, 2002; BAILEY, 2006).

The classical idea of the neutrality of science and knowledge is put into crisis by the positioning of the researcher, whose point of view becomes partial and variable with respect to the phenomena under scrutiny. The researcher ceases to be a mere observer but declares the impossibility of an 'outside' from which by studying we can move towards the 'inside' of the object of analysis (COLECTIVO SITUACIONES, 2003). The non-separation between researcher and researched (in other word the researcher's impossibility of transcending the object of investigation), and the relation established between interviewer and interviewee (that transforms the same research into a 'knowledge-in-relation'), are the basis of what I have called *living research*.

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autonoma, scientifica, indipendente, ma bisognava muoversi dentro una esperienza storica pervasiva e misurarsi con quel sussulto continuo, fatto di cause e di contraccolpi, [...] eventi e di emergenze inaspettate, che caratterizza gli stili storici della postmodernità.

[13] PhD Claudia Bernardi suggested this inspiring definition to me.

3. SUMMARY OF THE CHAPTERS

Chapter one of this research explores the correlation between the 'economic miracle' of East Asia and the current historical expansion of higher education, focusing in particular on China and Hong Kong. With these two case studies I investigate the deep transformation of universities related to that which I define as *massification 2.0*, that is, an expansion of education entirely governed by the forces of the market and its imperatives of economic valorisation. In fact, the progressive privatisation and the increasing cost of student tuition fees seem to be the main features of this phenomenon that overcomes the classical distinction between the public/private sector and brings new institutional hybridisations into being. On the one hand public and private universities are becoming more and more enmeshed: they overlap and interpenetrate in ways that makes it hard to draw firm boundaries between them, while mixed forms proliferate.

On the other hand, it is possible to observe how the marketization of tertiary education that involves the expansion of higher education is characterised today by the establishment of new second-tier institutions and universities in parallel to the presence of excellence and top universities.

In fact in this context the same expansion is characterised by the sharp internal differentiation of the educational system that implies, in turn, new labour market segmentation and the differentiation of the skilled workforce that I will describe using the categories of *cognitive differentiation* and *differential inclusion*. My hypothesis is that the current massification of higher education is becoming an important device in the filtering, restriction, and return of population and skilled workers around a whole set of internal national/transnational borders based on knowledge.

This research understands the current transformations of this region from the point of view of the changes in higher education and knowledge production, and throws light on the new hierarchies forming within an increasingly skilled labour force.

Using the concept of vertical social mobility, in Chapter 2 I explore not only the internal differentiation of the educational system, but also the link between education and the labour market, re-thinking the classical theories of human capital, credential inflation and signalling theory. Developing the concepts of stratification and differentiation, I investigate the divides between top and second-tier institutions in particular studying the function of global university rankings (such as the Quacquarelli Symonds World University Rankings (QS) and the Academic World Ranking University (AWRU) released in Shanghai, two of the most authoritative rankings).

Thus the transformation of the educational system brings out and multiplies, rather than mitigates, the differences between universities and this same segmentation refers to an original and powerful method of management of the increasingly qualified workforce.

Starting from analyses of economics, anthropology and sociology, and from the interviews collected in the fieldwork, I aim to demonstrate that the qualification in itself, if not provided by prestigious universities well-positioned in national and international rankings, has no linear nor positive influence on working conditions and wage.

Some say cognitive capitalism will be resisted by all those de-skilled by it, but in this chapter my aim is to demonstrate that similarly to previous de-skilling processes, a new class composition is emerging that rather than a defense of the old forms of labour, will require the invention of new forms of

struggles. Exploring the processes of *declassement*, *over-education* and *pauperisation* of the Chinese neo-graduates as well as the increasing underpaid internship in the 'World factory', I outline the transformation of students into a new figure of employment without any social guarantee for the future, drafting the increasing 'cognitive exploitation' in the knowledge-based economy.

In Chapter Three I study the internalization of Higher Education, the global geography of knowledge production and the emergence of a new dispositive: the Regional Hub of Education (RHE), a relatively new 'geopolitical dispositive' of student mobility focused on migration policies and commercial strategies to lure international students, thus deeply changing the internationalisation of higher education in Asia as well as at the global level. The Regional Hub of Education (RHE) in Hong Kong will illustrate a new cartography of global knowledge production that refers to new destinations and geopolitical centres of education. The growing intra-regional mobility in Asia and the internationalisation of higher education characterise the innovative cartography of the present, wherein knowledge production becomes *spatially dispersed* and *globally integrated*. Starting from the functioning of the RHE, I will illustrate an articulated set of vectors in which inequalities have been displaced and through which the geographical and temporal imbalances of the present are managed.

My hypothesis is that the ability of the RHE in attracting international students like a magnet is derived by the education of academic workforce and by the English language utilised as medium of instruction (MOI) in the universities. English is the main language spoken by the RHE, with which the universities courses are provided for international students.

The RHE is studied taking the case of Hong Kong and its policies, focusing on its student population as well as on the academic workforce employed in the universities of this city-state. The assumption is that the RHE is a crossroads, a contact zone where a heterogeneous and international composition of students are attending universities that are characterised by a highly international composition of the academic workforce (I refer to employees of universities, both full-time and part-time, covering duties of teaching or research, or that have positions in the university administration such as provost, dean, head of school etc.).

Then, I look at language as a medium of instruction to investigate the various aspects intertwined in the establishment and functioning of the RHE: considering this latter from the point of view of language, there results a really complex dispositive. Studying the academic workforce in Hong Kong and the use of Global English in its universities it emerges that in the management of these new socioeconomic stratifications through education and knowledge production, the latter have become a powerful biopolitical dispositive that has assumed control and governance of populations at a global scale, redefining in an original way the colonial relations of the past and its asymmetries. Knowledge, geographically embedded, defines the order of the current post-colonial space, while the global university describes not only this kind of order, but also how this imbalance is used by the skilled workforce as a sort of 'positional rent' to survive and to combat the *verelendung* in the local labour market[14].

[14] Karl Marx developed the concept of *verelendung* in a very deep and original way. According to Luciano Gallino (2006) there are at least seven definitions given by the Treviri's philosopher to this concept that first of all refers to the *relative* and the *absolute*

Looking at the English language as a medium of instruction (MOI) in Hong Kong reveals that higher education and its internationalization nowadays is an important dispositive to segment population within globalization, having the same force (or even more) as those of gender and race.

In the Chapter Four, I consider higher education and the transformation of academic labour inside the institution of the university, which has developed new forms of measurement and new units of the measure of value during its crisis. My hypothesis is that the university represents the most interesting terrain to observe the development of an original measurement of labour in its metamorphosis and the value form in cognitive capitalism. In recent years, this institution has been a *laboratory* for an unusual kind of measurement of academic labour and its productivity through the Impact Factor, the Science Citation Index (SCI) and the Social Science Citation Index (SSCI). Moreover, bibliometrics have achieved a significant level of complexity and authority in measuring the productivity and efficiency of labour (MOED, 2005). These instruments, once developed in the academic context, have now exceeded the university perimeters and are applied to heterogeneous fields of the so-called informational society (CASTELLS, 2000) or knowledge based-economy (ROONEY, HEARN, NINAN, 2005)[15]. Exploring the categories of living labour and the general intellect, I

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impoverishment of workers, that is an inherent feature of the capitalist system as a whole (more about ths concept in Chapter 2).

[15] One relevant example of this displacement and diffusion of this kind of measuring is the search engine Google.com, which functioning is based on the algorithm PageRank developed by Sergey Brin and Lawrence Page and directly inspired by bibliometric analysis used in academia (www.ilpubs.stanford.edu:8090/361/ (last access June 19, 2009). As these authors wrote: Academic citation literature has been applied to the web, largely by counting citations or back links to a given page. This gives some approximation of a page's

will defend the hypothesis that productive labour and surplus can no longer be measured on the basis of the labour-time directly dedicated to production. In the subsequent pages, I delve further into the platforms and algorithms that provide measures based on data analysis and information: an anatomy of what I call *cognitive measure*, that is a kind of knowledge, or better *a knowledge over the production of knowledge*, that organizes, segments and differentiates it.

Higher education reconfigures hierarchies and manages the complex displacement of the present: through the idea of *cognitive measure*, I aim to explore the effects of this measurement and how they can be seen as new forms of exploitation of the workforce where not only production, but also capitalistic command becomes more and more 'cognitive' and 'immaterial' and where measuring productive labour also entails acontrol and command over it.

Then, the second part of this last chapter focuses on the effects, the practices and the prescriptive rule of this measure, linking measuring to a new and original form of exploitation of academic labour inside the institutions of higher education. The assumption is that measuring academic labour means, at the same time, to command it.

In short, this chapter investigates the way in which capitalist command becomes more and more cognitive and immaterial: studying cognitive measures in the university reveals new relations of command and contradictions, hierarchies and segmentation in the milieu of the university. The chapter outlines new contradictions and displacements, original kinds of resistance and lines of flight through an examination of the relationship

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importance or quality. PageRank extends this idea by not counting links from all pages equally, and by normalizing by the number of links on a page. (Brin, Page, 1998)

between the development of the productive forces and the social relations of production: the emerging picture is one of a process that is neither smooth nor linear.

CHAPTER ONE

THE EXPANSION OF HIGHER EDUCATION AND THE NEW HIERARCHIES IN EAST ASIA

1.1 THE MASSIFICATION OF HIGHER EDUCATION THROUGH THE LENS OF 'EXPANSION AND DIFFERENTIATION'

In this chapter I will describe the current massification of Higher Education in East Asia showing how the relation between the universities and market forces, the privatization trends and the increasing amount of tuition fees seems to be the main framework of the current expansion of education.
From one hand public and private universities are becoming more and more enmeshed: they overlap and interpenetrate in ways that makes it hard to draw firm boundaries between them, while mixed form proliferate.
From the other hand it is possible to observe how the marketization of tertiary education that involves the expansion of higher education is distinguished today by the foundation of new second-tier institutions and universities in parallel to the presence of excellence and top universities.
My hypothesis is that the current massification of higher education is becoming an important devices in the filtering, restriction, and return of population and skilled workers around a whole set of internal national/transnational borders based on knowledge.

The transformations of higher education in Asia are usually explained through the lens of 'quantitative' changes, focusing on the increase in the

number of new educational institutions, students, or on the rise of undergraduate and postgraduate enrolments. This is with good reason: in fact this analytical dimension cannot be given a background role, because the change in access to higher education is perhaps one of the most important and evident changes that China is living through (ZHANG, 2009; ALTBACH, 2004).

Observing this phenomena, many scholars describe it in terms of 'higher education massification', or in terms of a transition 'from elite to mass university' (LI, LIN, 2008; ZHANG, 2009), echoing the pivotal studies inaugurate by the American sociologist of education Martin Trow, early in the 1970s, studying the transformation of higher education lived by the 'rich democracies' in the 'II post-war years' (TROW, 2004).

This authors, describing the passage 'from elite to mass and finally to universal access' (TROW, 1974) pointed out that the higher education systems that enrolled up to 15 per cent of the age group were best described as elite systems; systems that enrolled between 15 per cent and 50 per cent of the age group were mass systems; and those that enrolled more than 50 per cent were universal systems:

> As enrollments in the higher education institutions of every rich democracy grew in the post-war years, from 5 per cent just before and after the War to 30-50 per cent of the relevant age groups at the turn of the millennium, they passed through several phases. We can refer to these as the phases of elite and then mass higher education, phases which currently are opening up even further to become systems of universal access. (TROW, 2004)

The notion of massification continues to be used today in the contemporary expansion of higher education in East Asia, particularly in China (HAYHOE,

LI, LIN, 2011). Looking at the Asian continent it is clear that the South as well as East Asia is experiencing a large increase in enrolments in higher education, as a 2003 UNESCO study reported:

> In China […] expansion of higher education in the public sector has resulted in total student enrolments more than doubling from 6.4 million to 15.1 million between 1998 and 2002, while in India enrolments increased from 6.2 million in 1992-1993 to 9.3 million in 1999-2000 […]. In China, undergraduate enrolments alone increased by 135.2 per cent between 1998 and 2002. Even in countries with well-developed higher education systems increases in enrolments have been impressive. For example, total students enrolments in the Republic of Korea increased from 2,950,826 to 3,500,560 between 1998 and 2001 while in Australia over the same period total student enrolments increased from 671,253 to 726,418. (UNESCO, 2003)

Philip G. Altbach in his introduction to *Asian University* reported how

> in higher education, Asia has not traditionally been a leader in research or innovation. In the coming decades, however, Asia will experience massive higher education expansion – indeed, a majority of the world's enrolment growth will take place in Asia. (ALTBACH, 2004)

Focusing in particular on China, one could give an account of how the phenomenon this region is experiencing is one of the largest quantitative changes in the history of higher education in absolute terms (LI, 2004). In 2004, the Chinese higher education system was the largest in the world, with 19 million students enrolled in universities, adult education, private (*minban*) institutions, and distance learning programs. In comparison, India enrolled

nearly 12 million students and the United States had almost 17 million students in the same year (UNESCO, 2006).

A vein of research that has explained the recent changes in higher education in Asia has linked this development to the fiscal crisis that the region experienced in 1997. The positive correlation between the financial crisis and the expansion of education is mentioned in a recent UNESCO report on the impact of the economic crisis on higher education in East Asia. This study discovered an increasing enrolment in tertiary education in many Asia countries, due to the attempt by national governments to react to the depression caused by the regional crisis, using education as a *counter-cyclical* stimulus:

> higher education expansion was expected to stimulate domestic demand following the 1997 Asian financial crisis, and to mitigate the problem of unemployment due to the large-scale restructuring of state enterprises and streamlining of government agencies. (LITAO, SIXIN, 2008)

Describing the case of China, Xiao Biao and Wei Shen (BIAO, SHEN, 2009) write that the Asian financial crisis in 1997 placed the country in an unfavourable position with regard to competing with neighbouring countries for exports (due to the depreciation of other currencies). In response the Chinese government decided to try to sustain domestic growth by stimulating domestic consumption, a sort of 'neo-keynesism with Asian characteristic':

> owing to the lack of social security, people have generally preferred to save rather than spend on general commodities. However education has been an

> exception; it has been identified by planners and ordinary citizens as a new consumption item with great potential. (BIAO, SHEN, 2009)

Other scholars have illustrated how this expansion is due to new strategic policies by which some countries of Asia (particularly Hong Kong, Singapore, South Korea and Taiwan) since the 1997 crisis have been transforming their economies, moving from an industrial mode of production towards a more post-industrial form of capitalistic valorisation. This hypothesis understands the growth of higher education as a strategic driver for upgrading their national economies towards sectors of high added value where research, innovation and 'human capital' are considered 'strategic resources' for competing in the global economy. The studies of C. J. W.-L.Wee on public policies of these years in the city-state of Singapore, showed how the government has tried to overcome the 1997 crisis 'investing' in education, research and the biotechnology sector:

> the fundamental policy recommendation [of Singapore] was that the island-state must become an advanced knowledge economy in the next decade, with manufacturing and services being the twin engines of growth. Needless to say, a skilled workforce would be requisite. The role of traditional labor and capital becomes less important than what can be described as immaterial labor, along with 'intellectual capital'. (WEE, 2007)

Several Asian scholars, in studying the present expansion of higher education, have focused on its financial and economic aspects connected to a sort of 'fiscal differentiation' where different methods of financing and fiscal autonomy correspond to diverse institutions as well as alternative patterns of operations.

Some of these studies, investigating the neo-liberal principle of deregulation and economic liberalisation (NAIDOO, 2007; BROWN, 2000), have concentrated on the private institutions that are being placed side by side public universities in the provision of 'education services' (DUBIEL, 2010; MICHELSEN, 2010; LIN, 1999; DAHLMAN, AUBERT, 2001; ZHA, 2001; SUNA, BARRIENTOS, 2009; YUAN, 2003).

Other authors have shown that, particularly in Asia, the current higher education expansion is characterised not only by the presence of private universities, but also by the increasing self-financed courses promoted by public universities (CAO YAN, 2005; HEALY, 2006), and the presence of public universities that, despite being public, are for-profit oriented and 'corporate-like', managing to overcome in this way the classical distinction between the public and private sector (FRANCIS, 2001). New assemblages and institutional hybridizations are the result of the complex transformation of the university's funding system, caused by the progressive and constant de-funding of the education sector by the nation state (PSACHAROPOULOS, 1994; ZHONG, ZHU, 1997; MOHRMAN, 2008).

The intricate institutional heterogeneity that emerges from these studies underlines how today the expansion of higher education is parallel to a general increase of its costs to the student and their family.[16] The 'financial differentiation' of higher education makes its growth a process promoted and driven by market principles and by the solvent demand of the consumer. As Yuan Fujin writes:

[16] This is true for services in general.

> in Asia the rapid expansion and evolution in education [...] since the turn of century were made possible by radical introduction of market forces (Fujie, 2005)

An increasing number of scholars have described the ongoing massification as 'marketization of education' (MOK, 2000), or 'commodification of higher education' (YIN, WHITE, 1994), or 'massification through marketization', to use the useful definition of YUAN FUJIE (2005).

In this literature the words 'consumer', 'user' and 'provider' are used to describe choices and behaviour of students as well as the role and activities of the university. This grammar is reshaping the sense of learning as a social action, transforming education into a for-profit service: this is the condition of being measured by economic value. In this view, the marketization of education is socialisation to intellectual property, while the subjective elements of the process speak the language of economic valorisation (professor J. Solomon, interview).

Beyond national and regional differences as well as singular local specificities, the relation between the university institution and market forces, the privatization trends and the increasing amount of tuition fees, seems to be the main framework of the ongoing expansion of education.

In the current literature, the process of the massification of higher education is frequently associated with differentiation: differentiation and expansion of the education system seem to be two correlated phenomena.

FRAN VAN VUGHT (2008) gave a definition of the concept of differentiation as a 'process whereby a social unit changes into two or more other units' (this definition refers to what N. J. Smelser developed in his work *Social Change in*

the Industrial Revolution in 1959). Fran Van Vught introduces the concept of differentiation by distinguishing its meaning from that of diversity in a very accurate way; according to this author, differentiation as a concept denotes a dynamic process, while diversity refers to a static situation:

> Differentiation is the process in which new entities in a system emerge; diversity refers to the variety of the entities at a specific point in time. (VUGHT, 2008)

Studying the differentiation of the higher education system 'as a process' is important because allows us to observe not only the expansion of higher education, but also its related implications and effects on other systems, i.e. the labour market. Moreover this view allows us to observe trends and tendencies, both at macro and micro levels, which characterised the structure of higher education in its transformation. In these analyses it is possible to observe two ideas of differentiation that appear as 'horizontal' or 'vertical' processes. Horizontal differentiation characterises the development of systems that are distinct and interdependent, showing how they increase their inter-systemic and sub-systemic complexity. In contrast, vertical differentiation focuses on the different levels and kinds of power, as well as status, that manage the internal relationship between different elements of the systems (GALLINO, 2006).

In a recent comparative research on the transformation of the education system between Europe, the Middle East, America and Asia, Yossi Shavit affirms that

> expansion and differentiation are related with causal effect operating in both directions: diversified systems are more likely to have higher overall enrolment rates, and vice versa[17]. (SHAVIT, ARUM, GAMORAN, 2007)

It is possible to define this positive association and correlation as a sort of 'hendiadys': taken together, expansion and differentiation bring into focus the massification of higher education is undergoing today and its general implications[18].

Some descriptive tools useful to develop the hendiadys of 'expansion and differentiation' are the categories of 'non-linear education' and 'transverse education expansion' proposed by JIANXIN ZHANG (2009) in studying the process of higher education expansion within the ASEAN countries[19].

He has introduced the category of 'non-linear education', stressing how countries are adopting different typologies of institutions to increase higher education levels and its expansion. Jianxin Zhang has affirmed that 'non-linear education' enriches the higher education system within research universities, research and teaching universities, comprehensive universities, specialized universities and colleges, junior colleges, advanced vocational schools, adult higher education, technical and vocational education and training, as well as educational systems of half-year, one-year, two-year, three-year, four-year and other education (ZHANG J., 2009).

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[17] The countries in this comparison are Israel, Japan, South Korea, Sweden, Taiwan, United States, Great Britain, France, Germany, Russia, Switzerland, Australia, Italy and Czech Republic

[18] The 'hendiadys' is a latinised form of the Greek phrase ἓν διὰ δυοῖν: 'one through two'. The basic idea is to use two words linked by a conjunction to express a single complex idea.

[19] The Member Countries are: Brunei Darussalam, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, Vietnam.

The category of 'transverse education expansion' was proposed in order to describe the existence and coexistence of different typologies of higher education institutions such as private, corporate, franchising, cross-border, full-time and part-time (ZHANG J., 2009).

Yossi Shavit, Richard Arum, Adam Gamoran and Menachem Gila affirmed in their recent investigation that the expansion of higher education at a global level is characterised by a coexistence between two different orientations of university institutions, that it is possible to denominate respectively 'client-seekers' and 'status-seekers':

> the status-seeker university are engaged in various activities intended to enhance their prestige in terms of attracting 'high quality' faculty and students relative to competing institutions. Most important in this regard is social exclusion in the process of student selection through the elevation of admission criteria. [...]
>
> Client-seeking implies low admission criteria while status-seeking implies fewer clients than could otherwise be admitted. The conflict is often resolved through the differentiation of a status-seeking first tier of institutions and a client-seeking second tier, which is less selective and enjoys lower prestige. (SHAVIT, ARUM, GAMORAN, MENACHEM, 2007)

The categories of 'prestige' and 'status', introduced by these authors to describe the system of higher education, understanding the hendiadys 'expansion and differentiation' through different regimes of stratification within education and social mobility[20], while the expansion of higher

[20] The theories that understand the transformation of higher education from this point of view are perhaps of the richest vein in the social sciences. The origins of these theories are really heterogeneous: some are neo-liberal, others neo-Marxist, some are more cultural while others adopt a more economic approach. They have arisen as empirical studies,

education is studied through the concepts of stratification and segmentation[21].

So, it could be affirmed that the hendiadys of 'differentiation and expansion' focuses on the issues of hierarchy and social difference (or inequality) as they emerge out of the transformation of higher education.

Gabriele Ballarino wrote about the concept of differentiation (it recalls the studies of ALLMENDINGER, 1989 and SHAVIT, 1984):

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carried out with sophisticated methodologies to identify and weigh different aspects of social positions. The first academic analysis of this kind of study born between the 1960s and the 1970s in the U.S., pose a question that is typically Parsonian: the relationship between the forces of ascription and achievement, between status achievement (associated with individual ability) and status ascription (that is, the socio-economic status of family). Since the end of the 1970s, this sort of study, adopting this path of analysis, have tried to measure the relevance of different variables (education, family membership and status) on the inter-generational mobility (that is from father to son) and on the intra-generational mobility (between first job and current occupation) of individuals in terms of professional job and income. M. Blau, O. D. Duncan (1967); K. Alexander, B. Eckland (1975); W.H. Sewell, R.M. Hauser (1975); S, Bowles, H. Gintis (1976); Kenneth Arrow, Samuel Bowles and Steven Durlauf (2000).

[21] Accordingly to Luciano Gallino, stratification is a concept borrowed by analogy from the earth sciences and archeology; applied to a social system, in its most general sense, it refers to the fact that both individuals and groups of individuals are conceived of as constituting higher and lower differentiated strata, or classes, in terms of some specific characteristic or set of characteristics (Gallino, 2006). E. A. Ross includes stratification within 'social processes' and in his work 'Foundation of Sociology' distinguished three kinds of stratification: differentiation, segregation and subordination. (Ross, 1905). The 'social' stratification that appears in early 1920s American sociology represents social space as a vertical space along which members of a society are distributed.

With segmentation I refer to labour-market segmentation. The British economist Alfred Marshall first introduced the idea of non-competing groups in the labour-market in the 1880s. With the concept of segmentation in particular I refer to the so-called dual labour-market theory developed by Peter Doeringer and Michael Piore (Doeringer, Piore, 1971). It revolves around the identification of a split between two analytically distinct sectors in the labour market: a primary sector and secondary sector with quite different wage and employment characteristics.

> differentiation is a process by which the paths of those who enter the education system are differentiated, so that some paths are *better* than others. [...] The differentiation can be either qualitative or quantitative: in the first case it changes the duration of permanency of young people in the system, in the second instance they take differentiated educational pathways even on equal duration. (BALLARINO, CHECCHI, 2006)[22]

The distinction between qualitative and quantitative differentiation reported by Gabriele Ballarino was introduced for the first time by Steven Brint, who analysed the American educational system as differentiated; he used the famous definition of 'academic tracking' to describe the higher education system, later developed by Adam Gamoran and Robert D. Mare; for these authors 'academic tracking' is:

> the system of assigning students to different curricula according to their purposed interests and abilities; […] the usual approach to analyzing track effect is to incorporate them into linear models of academic achievement and social stratification. Such studies typically classify students by track (e.g. college vs. vocational vs. general, or academic versus non-academic) and treat track as a variable. (GAMORAN, MARE, 1989)

Yossi Shavit pointed out the positive and negative elements of this approach, particularly focusing on its problematic aspects that make the tracking system a dispositive of social exclusion:

[22] Translation mine. Here the original Italian: *é un processo mediante cui i percorsi di coloro che entrano nel sistema formativo sono differenziati, di modo che qualche percorso sia migliore degli altri.[…] la differenziazione può essere di tipo qualitativo o quantitativo: nel primo caso cambia la durata della permanenza dei giovani nel sistema, nel secondo essi compiono percorsi educativi tra loro differenziati anche a parità di durata.*

> Opponents of tracking view it is a mechanism of social exclusion. Students of subordinate social origins are typically assigned (ostensibly because of their lower scholastic aptitudes) to the low tracks, which constrain their educational and socioeconomic attainments. Upper-class students, on the other hand, are placed in tracks, which lead to positions at the top of the socioeconomic hierarchy. (SHAVIT, 1984)

These studies about tracking, introducing the educational system as *qualitatively differentiated* rather than simply *quantitatively segmented* on the basis of years of study, also influenced the way of understanding and evaluating the higher education. While quantitative differentiation is usually a variable metric, qualitative differentiation is a categorical or nominal variable.

The first is measured by the years of schooling (assuming that almost all years are the same for everyone, in terms of both costs and benefits) and the only aspect that changes is the duration (t) of the education period. This simplification can be justified in the case of an educational system with low differentiation. In contrast, in a highly stratified structure, characterised by high level of internal diversification (the case of East Asia), the variables that refer to educational differentiation and to the level of education attained by students become categorical. This variable measures the educational differentiation based on reputation, prestige or quality of university within the global hierarchy of universities.[23]

Researchers of 'academic tracking' have highlighted that today the expansion of education is associated with different curricula, and that

[23] On the issue of categorical variables see Chapter 2 of this work.

educational choice involves more than just the two options: to continue or to drop out.

> Most education systems are tracked, in one form or another, and students must choose among various tracks within the system. Several scholars have argued that concurrent with expansion, qualitative differentiation replaces inequalities in the quantity of education attained. (SHAVIT, 1984)

In recent years, in Asia, several studies inspired by the theory of tracking have flourished simultaneously with the expansion of higher education that this region is undergoing; in this field of research the studies on the Associate Degree in Hong Kong (HEALY, 2006; CHENG, 2010) are relevant, as well as the research on vocational education and its relation with university education (MOK, LAU, 2002). This is even more true in China: there is an increasing importance placed in the literature on vocational schooling and its relationship with college and university (LITAO, YANJIE, 2010). These studies focus on the social changes that the country is experiencing during its current period of transition (CHEUNG, 1996; KONG, GIMMESTAD, 1999; ZHANG, 1991), analysing its reforms and problematising its trends (ALTBACH, UMAKOSHI, 2004; POSTIGLIONE, MAK, 1997; MOK, 2003b).

Other scholars have based their research on qualitative variables strictly focusing on university institutions instead of studying the educational system as a whole (FUJIE, 2005; MOHRMAN, WANHUA, BAKERC, 2008; SALMI, 2009). In a certain sense, these authors have used the idea of 'tracking' as a device to explain differentiation *inside* universities. In this way the meaning of differentiation is linked to the divide between top institutions and second-tier universities, while different degrees of prestige, status and reputation

characterise the coexistence of different universities and the value of degrees released.[24] So there are not only vocational versus academic degrees, colleges versus university curricula: the qualitative differences are *between* universities and *between* their degrees.

Inside the university system it is possible to observe a differentiation process that produces vertical hierarchies, dividing universities between premier league and second-class, strong and weak degrees (COBALTI, SCHIZZEROTTO, 1994).

Thinking about the centrality and increasing importance that rankings of universities in Asia are assuming[25]; moreover thinking about the 211 or 985 projects in China[26], where the so-called *key universities* coexist with the second-tier institutions (MOK 2007; CHAN, TEE NG 2008): these elements show how the higher education system of China, Hong Kong and Asia as a whole includes more and more institutions that are increasingly differentiated in terms of recognition, status, resources and selectivity (ALTBACH, UMAKOSHI, 2004).

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[24] On this issue in particular see Chapter 2.

[25] On this issue in particular see Chapter 2 and 4.

[26] Project 211 (Chinese: 211 工程; pinyin: 211 gōngchéng) is a project of National Key Universities and colleges initiated in 1995 by the Ministry of Education of the People's Republic of China, with the intent of raising the research standards of high-level universities and cultivating strategies for socio-economic development in key disciplinary areas as a national priority for the 21st century (www.chinaeducenter.com/en/cedu/ceduproject211).
Project 985 (Chinese: 985 工程; pinyin: 985 gōngchéng) is a project first announced by CPC General secretary and Chinese President Jiang Zemin at the 100th anniversary of Peking University on May 4, 1998 to promote the development and reputation of the Chinese higher education system (and codenamed after the date of the announcement, 5/98 or 98/5). In the initial phase, 9 universities were included in the project. The second phase, launched in 2004, expanded the program until it has now reached almost 40 universities (www.chinaeducenter.com/en/cedu/ceduproject211).

In the next sections of the chapter I will show how each quantitative transformation is intertwined with qualitative changes in the massification of higher education.

1.2 THE STRATIFICATION OF THE HIGHER EDUCATION SYSTEM IN CHINA AND HONG KONG

a. The case of China: from the key universities to the second-tier colleges. An overview of higher education since 1990

The expansion of the Chinese higher education system, the differentiation and the growth without precedent of its institutions, as well as the enrolment of students, is characterised by a first phase *grosso modo* from 1990 to 1998: it is determined by public policies that focus on aggressive and sharp differentiation among the Chinese public universities, involving at the same time new modalities to allocate public funds for universities.

This internal differentiation was distinguished by the rhetoric of 'quality', as well as the idea of Chinese universities of competing at a global level; this ambition and challenge radically changes the values of social justice and equity of public education policy in China (QILI, 2010). 'Excellence' and 'competition' were the words that 'have lead the 90s reforms of the public universities' (MOHRMAN, 2008).

In particular the projects 211 and 985, instituted by the central Government of Beijing and composed by a narrow selection of universities, have drastically modified the shape of the university public sector[27].

The aim of these projects was to implement teaching and scientific research in key disciplines of few universities, and the strategy to obtain this result was providing extraordinary funds. This has resulted in a strategic re-allocation of resources in the whole system of universities, setting up the infrastructure of the current differentiated higher education system (MOK, 2003a).

In 1995, the Ministry of Education of the People's Republic of China initiated the 211 project that groups together 106 key universities and colleges of the 21st century.

> The name of this project is composed by the number 21, that refers to XXI century, and 1 that represents about 100 institutions involved in that project. The aim was to set up an elite of educational institutions, around the 5 percent of the total, able to compete against the best school and universities of the world. (MOHRMAN, 2008)

On the 4th May 1998, the 985 project was announced by President Jaing Zemin at the university of Beijing (the name of the project is composed of 98 and the number 5 that represents May), 'in order to improve the international profile, research and teaching of a small group of universities' (MOHRMAN, 2008). These two projects have changed national funding for universities, which has become more and more differentiated 'based on

[27] The complete list of universities of these projects is presented in the Appendix (see documents A.3 and A.4).

disparity, selection and the criteria of competition' (ALTBACH, 2004). The description of the 211 project made by the Chinese Minister of Education is quite clear about that:

> The 211 project has three major tasks: firstly, top priority was given to intensively finance Peking University and Tsinghua University in order to facilitate these two universities into approaching a higher level of world standard and eventually become world class institutions. Secondly, through provision of additional funding, 25 key universities were selected for upgrading of their quality of teaching and research activities in key disciplines. Thirdly, further effort would be made to enhance around 300 key disciplines in different institutions. (CHINESE MINISTER OF EDUCATION, 2005)

'World Class University' (WCU) and 'key universities' are elements of the massification of higher education in China, directly marked by sharp differentiations of resources and funds, these latter more and more concentrated into a small group of universities.

Kathryn Mohrman, in her article *The emerging global model with Chinese characteristics*, affirmed:

> 211 and 985 projects [are] both designed to pump literally billions of Yuan into China's best universities. In the first round of three-year grants under the 985 Project, for example, Peking and Tsinghua universities each received Y1.8 billion ($225 million) and Fudan, Zhejiang and Nanjing Universities each received Y1.2 billion ($150 million). Zhongshan University received Y300 million ($38 million) from the central government and Y900 million ($113 million) from the province [...].

> These special grants represent a significant increase in available funds for a given university. For example, Peking University's annual operating budget in 2003 was approximately Y2 billion ($250 million), so an annual infusion of Y600 million ($75 million) from the 985 Project represented a 20 percent increase in expendable resources. Most institutions in the 985 Project used the first three years grant for infrastructure needs, including land purchases, construction of academic buildings, and faculty support. In the second round, the emphasis has shifted to research support and faculty salaries. In some academic departments, 985 funding pays for as much as half the annual compensation for faculty, raising questions about what will happen if this source of support dries up. For the time being, however, these top institutions are counting on continued funding from the state at substantial levels. (MOHRMAN, 2008)

For universities right on the edge of inclusion and exclusion,

> the omission from the list of 985 Project institutions is a judgment of second-class status for the foreseeable future. This policy [...] is a return to elitism with a vengeance. (MOHRMAN, 2008)

As it is clear from this long quotation 'the rest', that is the large majority of national institutions not selected by the central government (around 90 per cent), have less prestige and status, and struggle to generate enough money to maintain their teaching and research activities. This strategy produced an internal segmentation where many poor institutions with less prestige and excluded from these projects, are forced to generate their own revenue by themselves in a mix of speculation and local deregulation (QILI, 2010), or are almost entirely financed by loans from local government (QUOSDORF, 2010). This first phase, concentrated on defining the key or top university through

a deep restructuring of Government expenditure on education, describes the foundation of a sort of 'special university institution' (SUI), that is a small group of well funded national universities as a goal of the public management. Compared to the characteristics of the Special Economic Zones (ZES) described by Aihwa Ong[28], the Special University Institutions (SUI), as have emerged out of the 211 and 985 projects, have to attract and spend national capital to compete at the international level; they must forge and set up joint programs and partnerships with selected and well-ranked foreign universities to improve China's brand and lead the global research; finally the SUI have to produce a really competitive codified knowledge and let market conditions drive their knowledge production.

The faster and ambitious expansion of higher education of recent times was launched on the basis of this infrastructure deeply and internally highly differentiated.

From 1999 to 2006: the 'expansion through marketization' of higher education

The period from 1999 to 2006, represents a massive increasing of student numbers without precedent. This stage is parallel to the establishment of new universities as well second-tier private colleges. Lei QiLi, in a recent article, reported that between 1998 and 2006, there was a five-fold increase of incoming students, with a 'total population of 5.4 million freshmen entering

[28] Aihwa Ong, in her book 'Neoliberalism as exception' identifies four aspects that dictated the political conditions of Special Economic Zones (ZES): to attract and utilise foreign capital; to forge joint ventures and partnerships between mainlanders and foreigners; to produce wholly exported oriented goods, and to let market conditions (i.e. not politics) drive economic activity (Ong, 2006).

the university in 2006' (QILI, 2010).[29] Within the increasing diversification of curricula, degree and education institutions, almost all high school graduates with the necessary financial resources were able to gain admission to professional colleges, private institutions and numerous regional universities.

Soon after the 1997 economic crisis, the Asian Development Bank and the Chinese Minister of Education (MOE) proposed to expand higher education as a 'counter cyclical' device for increasing jobs, solving the urban unemployment caused by the financial crisis and providing a skilled workforce to an economy that needed to undergo significant revisions (LITAO, YANJIE, 2008).

For these reasons, in 1999, the State Council approved the so-called 'plan of revitalising education in the 21st century' proposed by the Ministry of Education, which set a target for China to reach the tertiary enrolment ratio of 15 percent by 2010 (LITAO, SIXIN, 2008):

> The Plan pushed China's higher education into a booming stage: the number of new students increased by 50 percent in the first year, from about 1.1 million in 1998 to 1.6 million in 1999. In subsequent years up to 2006, on average there was an increase of about half a million students every year. As a result, about 5.5 million new students were enrolled in higher education in 2006. The dramatic pace allowed China to increase its tertiary student enrolment ratio from below 10 percent to 23 percent. (LITAO, SIXIN, 2008)

[29] Admission of students seeking bachelor and associate degrees in 2005 reached 4.75 million, an 8% increase over the 4.1 million students entering in 2004. A similar trend toward rapid growth has been observed in graduate education and the granting of masters and doctoral degrees. The number of degrees awarded, on average, has increased annually by 27% since 1998. Graduate admission nationwide was estimated at 72,000 in 1998. That figure reached 269,000 in 2003; 326,000 in 2004; 367,000 in 2005; and 400,000 in 2006 (QiLi, 2010).

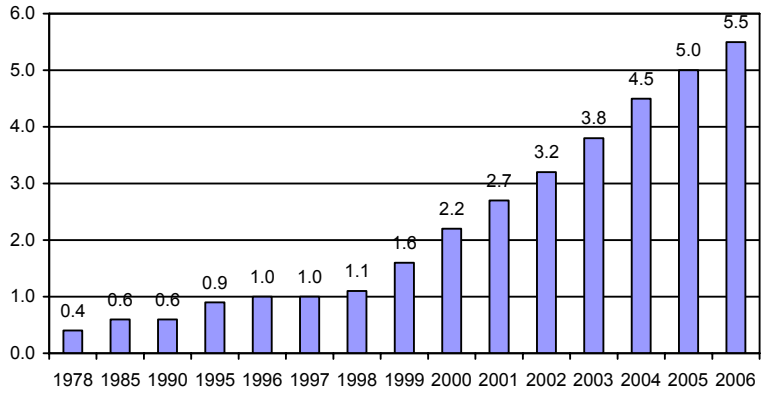

Figure 3: Student enrolment in higher education: 1978-2006 in millions (source: China Statistical Yearbook 2007)

From 2000 to 2006 this rapid expansion of student enrolment was closely associated with the growing in number of higher education institutions and the progressive fiscal expenditure on the re-organization of universities. The increase in institutions was parallel to the boom in construction of new campus: the universities were forced to spend money and resources to build up new campuses and new facilities able to host an increasing number of students. Since 1999 'college towns have sprung up in many parts of the country, thanks to the perception that universities bring cultural and economic benefits to the local community' (QILI, 2010). The new College town or 'higher education mega center' is the new face of this astonishing expansion of higher education (LITAO, SIXIN, 2008).[30]

[30] One example is the Guangzhou Higher Education Mega Center, which is a university campus composed of eight different universities and able to host around 400,000 students on an island at the southern periphery of Guanghzou. This infrastructure is very similar to other university campuses established recently in China: all of them are located in the new development zones far away of the city centre (Zhang, W. 1991). They embody an original shape somewhere between concentration and isolation to better control the young student population that is so rapidly increasing. Students do not just study there: they spend most

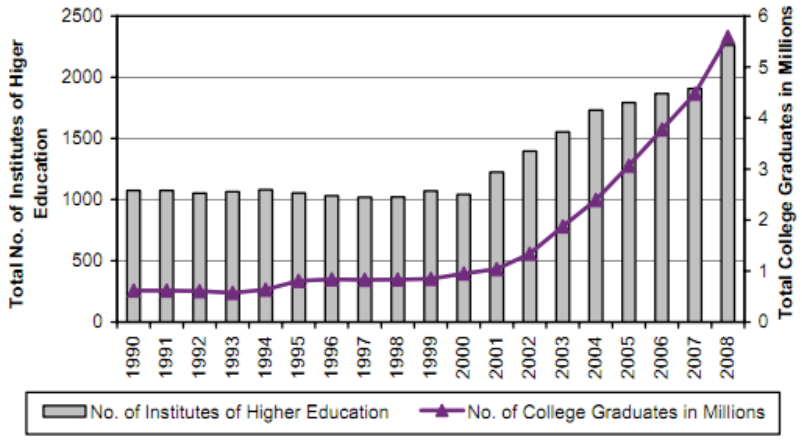

Fig 4: The expansion of higher education institutions in China 1990-2008 (source: National Bureau of Statistics: stats.gov.cn/english)

The progressive decrease of Government expenditure was counterbalanced with the rapid increase in student tuition fees (MOK, 2003). *Figure 5* shows the relative revenue composition of Chinese universities: it is possible to observe the growing public de-funding from 1998 to 2006, and the consequent increasing importance of tuition fees since 1999.

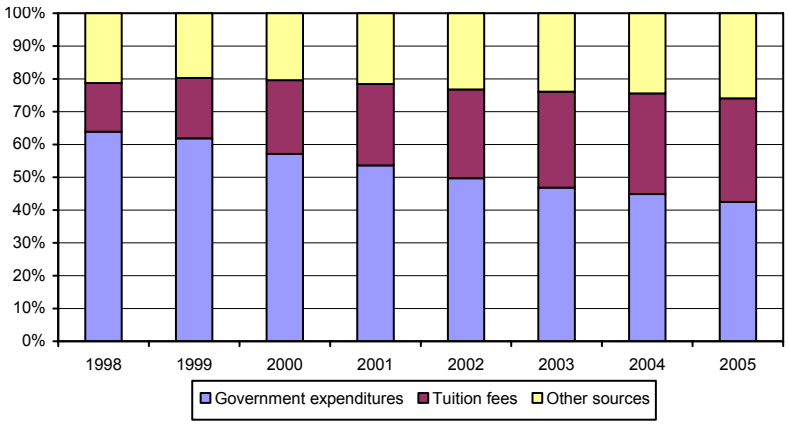

Figure 5: Sources of funding for China's higher education 1998-2005 (source: China Statistical Yearbook 2007)

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of the time living in those campuses which brings out the so-called 'dormitory labour regime' (Ngai, 2007; 2005) of the 'city-factory' model.

Moreover, since 1999, many public universities have been allowed to establish independent colleges, which operate like private higher education institutions (FUJIE, 2005)[31].

This is the case for the Shengda Economics Trade and Management College of Zhengzhou University, a private college located just outside of Zhengzhou, in the Henan region, that accounts for around 13,000 students, or the East Soft Information Institute, jointly founded by Northeast University and the East Soft Group Company. They are just two cases among hundreds of new colleges that were set up in China during the period of time in question, when the so-called government 'market reform' of the education system, parallel to the plan of revitalizing education, has allowed the diffusion of profit-oriented private institutions and encouraged its vast expansion (FUJIE, 2005).

Several of these kinds of institutes were set up to enrol millions of new students who could not enter public university because of the national entrance examination: for those who did not perform well enough on the so-called *gaokao* examination, the government gave the alternative opportunity to continue to study by paying the expensive fees of private college[32].

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[31] The first independent college in China was the City College of Zhejiang University, which was founded by the Hangzhou Municipal Government, the Zhejiang University and the Zhejiang Telecom Industry Group in 1999.

[32] The National Higher Education Entrance Examination, more commonly known as *Gaokao*, is an academic examination held annually in the mainland of the People's Republic of China. This examination is a prerequisite for entrance into almost all higher education institutions at the undergraduate level. In 2006, a record high of 9.5 million people applied for tertiary education entry in China. The National Higher Education Entrance Examination is not uniform across the country, but administered uniformly within each province of China or direct-controlled municipality. The National Higher Education Entrance Examination is graded variously across the country, it is arranged at the end of the Spring

This kind of graduate and postgraduate private course needed a partnership with a 'mother university' (that is a recognised public institution to supervise the quality of teaching) as a requirement for establishing their activities.

However the new institution exploits the name of the public university only to promote themselves, using the reputation of the well-known mother academy's name as a brand to enrol new students; 'some colleges were used to offering certificates bearing the names of higher status institutions, luring students and charging high prices for this distinctive label' (CHAN, 2006).

While Chinese law imposed this affiliation with a public university in order to provide higher degrees, at the same time this norm stimulated the public university itself to act much more in a business-oriented fashion (HAYHOE, LIN, 2008): lots of public second-tier universities opened their own colleges to generate extra revenue and to better manage their loans to attract more high fee paying students. 'A common way for public universities to earn extra cash is to start schools of their own, which they then run, in effect, as expensive private schools' (BRODY, 2007).

Although most places of graduation are still funded by the government, they now operate much more like businesses. They are allowed to generate extra revenue and so improve their facilities and attract more students willing to pay as much as five times the amount of fees to obtain a degree signed by

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semester and secondary school graduates across the country take the examination simultaneously over a three day period. Those who are not accepted should pay fees, for example taking the case of the Shengda College: students paid USD 2,500 a year to attend courses compared to China's per capita GDP of just USD 1,500. Shengda's fees are five times higher than those of the national-level Zhengzhou University of the same region, but 'far from obtaining a higher quality of education, the exorbitant fees are a means of virtually buying a university degree' (Kahn, 2006a).

the name of the 'mother university' instead of by an 'anonymous' college (BRODY, 2007).

These new colleges and the so-called 'fee paying' students were the central figures of the Chinese expansion of higher education:

> Compared with other types of regular higher education institutions, significant increases can be seen particularly in the newly founded independent colleges, which used to be called second-level colleges (*Erji Xueyuan* in Chinese) within or attached to existing regular universities. Currently, it is estimated that the number of students enrolled in independent institutions constitute one third of all undergraduate students and therefore they have made major contributions to the growth of student numbers in regular institutions. (FUJIE, 2005)

China's perspective represents the complexity of the interaction between private and public actors in globalisation, showing the proliferation of hybrid organisations: the blurred boundaries between public and private have come to define the core of the present expansion of tertiary education. In this framework, State and market are becoming more and more enmeshed: they overlap and interpenetrate in ways that makes it hard to draw firm boundaries between them, while hybrid and mixed forms proliferate (FRANCIS, 2001).

The expansion of higher education means a new social stratification and differentiation made by new institutional combinations that involve complex and original assemblages. Simultaneously from the mid-1990s to the present, what emerges is a higher education system constituted by the *concentration* of public funds and *dispersion* of educational institutions: the coexistence of

these disparate and alternative elements is the *foundation* of the transformation of China's higher education system.

b. The case in Hong Kong of Associate Degree and fee-paying students

Associate degrees are worthless.
Associate Degree student Ng Ting Nga, interview

The majority of associate degree students joining the workforce after the demise realised the low acceptability of associate degrees in the jobs market. They had to face discrimination while having to repay the huge loans borrowed for their studies. The issue makes us ask the question: is the associate degree a 'way out' or a 'dead end'?
Citizen watch, episode 3, OurTV Team[33]

Since 1997, Hong Kong has been a city-state that is formally part of China and it has acquired the status of a Special Administrative Region (SAR) until 2047. The year of independence from the British colonial government can be considered as a sort of watershed in the educational policies of Hong Kong. In its post-colonial era, almost simultaneous to what happened in Mainland China, Hong Kong's public policies have changed rapidly: its national education system increasing the local student population by a progressive marketization of its tertiary education.[34] (TUNG, 1999)

[33] www.ourtv.hk/cgi-bin/ourdb/bdetail?session_id=start&share=ourdb@ourtv.hk&dbname=vid_Video&template=344118260202&key=300 (last access June 20, 2010)

[34] Before 1997 the percentage of Hong Kong citizens with a higher degree was around 20% of the total population (Tung, 1999). In this section I will focus on the policies directed at the expansion of local student numbers, while in Chapter 3 of this research I will highlight the international composition of students and scholars in Hong Kong's public universities.

Eight public universities comprise Hong Kong's higher education system; some of them were colleges that the Government recently allowed to upgrade to becoming universities for graduate and postgraduate students, like Lingnam University or the Hong Kong University of Science and Technology[35].

Table 1: growth of Hong Kong's local universities

Institution	**Year became university**	**History**	**Funding arrangements**
University of Hong Kong (HKU)	1911	Oldest providers of university education in Hong Kong	Publicly funded though the University Grants Committee (UGC), a non-statutory advisory committee that advises the Hong Kong government on development and funding needs of Hong Kong higher education institutions
Chinese University of Hong Kong (CHKU)	1963		
Hong Kong University of Science and Technology (HKUST)	1991	Established as a university	
Hong Kong Baptist University (HKBU)	1994	Founded in 1956 as Hong Kong Baptist College, started offering degrees in 1983, operated fully at degree level in 1989	
Hong Kong Polytechnic University	1994	Founded in 1972 as Hong Kong Polytechnic	
City University of	1994	Founded in 1984 as	

[35] They are: the University of Hong Kong, the Chinese University of Hong Kong, the Hong Kong University of Science and Technology, the Hong Kong Polytechnic University, the Hong Kong Baptist University, the City University of Hong Kong, Lingnan University and the Hong Kong Institute of Education.

Hong Kong (HKCU)		City Polytechnic of Hong Kong	
Longman University	1999	Founded in 1972 as a Lingnan college, became degree-awarding in 1992	
Open University of Hong Kong (HKOU)	1997	Founded in 1989 as Open Learning Institute of Hong Kong	Self-financing
Hong Kong Shue Yan University	2006	Founded in 1971 as a Shue Yan college, registered under post-secondary College Ordinance in 1976	Private, self-financing

If from 1990 to 1997 government educational policies were oriented to a general upgrade of institutions of tertiary education, since 1997 these same policies have shifted to a gradual privatisation. This new approach coincides with the aim of increasing the number of university students, as reported by N. J. FRENCH (1997):

> the government has undertaken an original path of privatization of the education service in order to increase on the 40 percent of the student population and minimizing the public expenditure at the same time. (FRENCH, 1997)

Following this ambitious plan, the first private university was established in 2006: the Hong Kong Shue Yan University (HKSYU) was recognized as the first private university by the order of the Chief Executive of Council on 19 December. Despite Shue Yan University being the only private university of

Hong Kong, from the interviews that I have collected it has emerged that it is a sort of 'pilot project' for the future shape of the Hong Kong higher education system. This is also confirmed by the policies of the government, whose intention is to build a progressive assemblage between public and private institutions, changing in this way the higher education outlook of this city-state (HKSAR GOVERNMENT, 1999). In fact this Special Administrative Region is experiencing an original expansion of tertiary education promoted by a increasing number of profit-oriented and private institutions, courses and private programs, where the pro-business ratio and the logic of the market are leading to the increase of the local student population (UGC, 2004b). Just as in mainland China, in Hong Kong it is possible to observe a syncretism of different logics that brings new social segmentation and the coexistence of alternative institutions: beside the excellence of the few public universities based on selective access, there is an increasing number of second-level colleges and private universities characterised by less competitive criteria of access, less prestige and more market orientation.

Professor Hui Po-keung of Lingnam University reported during an interview that:

> in Hong Kong the public university attracts the best student in term of their examination results, and not many of them want to attend private universities: this sector is just the second choice for those whom can't enter the public one. (HUI PO-KEUNG, interview)

This is the case for the Hong Kong Shue Yan University: its reputation is not very high, its criteria of access are not as competitive as the public

universities; it is the university for local students who did not do well at the national examination but are able to pay high fees to study.

If the Shue Yan University is a case of an 'extreme form of privatisation of higher education' (CHEUNG SIU KEUNG, interview) this is not the only path by which the transformation of higher education is taking place in Hong Kong. Through the increasing number of undergraduate students it is possible to observe an institutional hybridisation taking place as well as a new 'becoming-private' of the public university itself. This process involves the establishment of a new degree level: the associate degree programs (AD), introduced in Hong Kong to foster the expansion of higher education. The associate degree was an invention of the public government that at the beginning called this certification a *sub-degree* and then an *associate degree*; that means in between secondary school and tertiary education (MAN-SING, 2002). This certificate 'is a little bit more than a diploma, but it is not yet a bachelor degree. It is a '*half-baked* degree' (CHEUNG SIU KEUNG, interview). In order to expand the student population, in 2001 the government of Hong Kong introduced new self-financed programs and curricula where students are not required to pass an exam to enter (UGC, 2004a). As can be seen in *Figures 6* and *8* below, while the total number of students in the public universities slowly increases from 2001 to 2007, the greatest expansion in tertiary education is realised by the associate or sub-degree.[36]

[36] These graphics are extrapolated from the research: Hong Kong Sub-Degree Sector Market Research Prepared for the British Council Hong Kong, ACTIVEminds consulting www.educationuk.org.hk/Pdf/partnership/Feb07/activeMINDS_HK_Sub-degree_Presentation.pdf

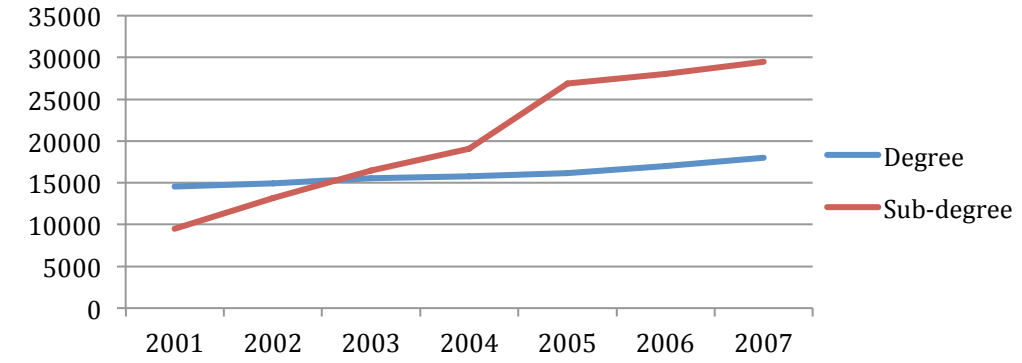

Figure 6: Annual intake: sub-degree student and government-funded Undergraduate (source: REVIEW OF THE POST-SECONDARY EDUCATION SECTOR, EDUCATION AND MANPOWER BUREAU, March 2006)

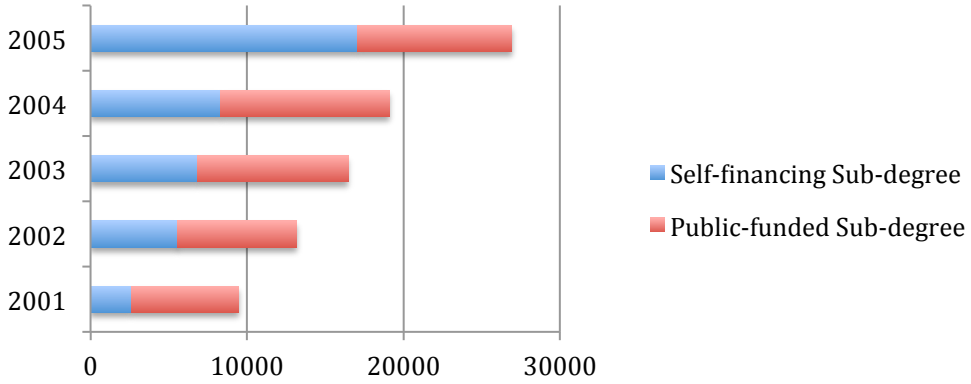

Figure 7: Self-financing vs. public funded sub-degree programs (source: ACTIVEMINDS AND EDUCATION AND MANPOWER BUREAU, March 2006)

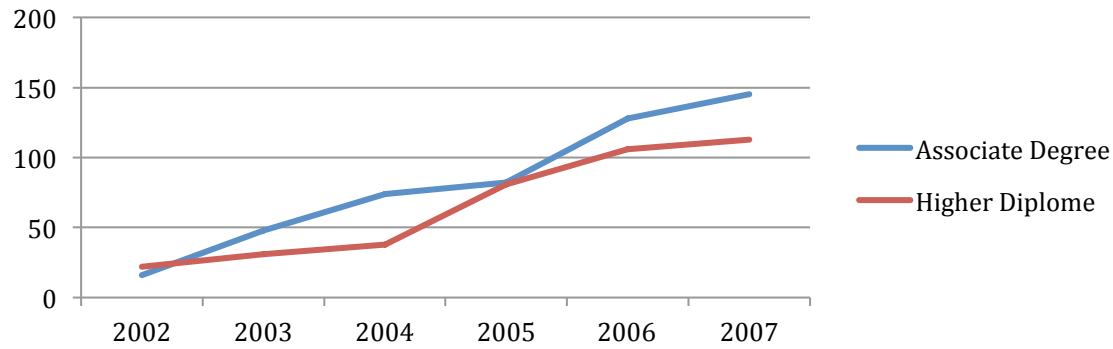

Figure 8: Number of full-time accredited self-financing post-secondary programs classified by level of programs (source: ACTIVEMINDS AND EDUCATION AND MANPOWER BUREAU, March 2006)

The particularity of this kind of degree is that despite the fact that they are provided by public universities, most of these programmes are entirely paid by students: they are self-financed (see *Figure 7*). As reported two professors during an interview:

> The government encourage the private institutions to set up self-funded programs and, at the same time, a self-financed program was set up within the public university. (CHEUNG SIU KEUNG, interview)

> The government encourage the AD due to budget reasons, expanding the number of the so-called 'associate student'. It is a way by which there are lots of gains for university because the 'associate student' pays quite high fees. (LAU KIN-CHI, interview)

The campus of Lingnam University, a former vocational college that became a university in the 1990s, is lived in by 'regular' students as well as by 'associate' students. Two different populations, who follow different kind of courses and have different expectations, are living the same university:

> In the campus, in our canteen one can see lots of different students at the same time, in the same place: first degree and associate degree students, although the latter are paying all the cost of their education. The university is becoming clearly divided in two: one part is subsidized by the government, whose quota is very strictly limited, while for the sub-degree programme there is no quota at all; the more, the better. (LAU KIN-CHI, interview)

Within this framework it is clear that increasing the student population is realised by raising education costs charged to students and their family; at

Hong Kong, as well as in Mainland China, the distinction between public and private is becoming blurred and public management is oriented toward a more business-like approach. This 'interregnum' is one of the most visible characteristics of the expansion of education where public universities start to establish their own private college in their campuses, using their facilities and their name as a brand for full-fee paying students.

The expansion of education takes the form of a new way of funding through new hierarchies and segmentation: the new associate degree close to the first degree makes a clear hierarchy of the skilled workforce through the qualification of knowledge, and 'this hierarchy is maintained by the responsibility of the government' (LAU KIN-CHI, interview). In this framework, the students' expectations of obtaining a first degree is what motivates them to take associate degree courses:

> Students are motivated by the fact that there is the possibility to enter the public university if their score as 'associate student' is high enough. (HUI PO-KEUNG, interview)

> Most of the sub-degree students want to continue to study and to obtain the first degree; this is a common sentiment because this 'half-baked degree' is hardly recognised such as a proper degree by society as well as by lots of employers in the labour market. (CHEUNG SIU KEUNG, interview)

In order to expand the undergraduate population through the associate degree, the government raised the expectations of students by portraying this educational program as a pass for entering public university and to obtaining their first degree:

> If you are lucky enough, you will be able to enter university by direct application from an associate degree program but for the other, that is the great majority, they will have just a half-baked degree. (LAU KIN-CHI, interview)

Moreover the expectation of continuing to study soared because lots of the associate degree programs 'are established close to the main campus of the university, if not coinciding with it' (LAU KIN-CHI, interview): this is an 'incentive to foster expectations', a proper form of 'misleading advertising' because the reality is that 'only three percent of students are able to continue to study in the public university' (CHEUNG SIU KEUNG, interview).

1.3 THE COGNITIVE DIFFERENTIATION AND THE DIFFERENTIAL INCLUSION

In previous sections I have shown that the expansion of higher education is distinguished today by the foundation of new second-tier institutions and universities. Nevertheless, the marketization of tertiary education is parallel to the presence of excellence and top-universities. In the cases of Hong Kong and China, the transformation of higher education related to its expansion, reveals first of all an increase in private and client-seeking universities. The expansion of Asia's higher education outlines a new form of development of the private sector; increases in tuition fees channel the present and future enrolments of the student population into new second-tier institutions.

From the associate degree of Hong Kong to the degree offered by independent colleges and the key universities of China, this picture

describes a different kind of degree related to different university's brand, ranking and reputation. This high heterogeneity implies, in turn, a sort of differentiation of the skilled workforce. This process can be defined as a sort of *cognitive* differentiation of the workforce because it is based on information, or, to be more precise, on different types of knowledge, curricula, qualification and disciplines of study. The idea of 'cognitive differentiation' refers explicitly to the concept of the 'cognitive division of labor' proposed by EL MOUHOUB MOUHOUD (2002). Describing the growing importance of knowledge in contemporary capitalistic production, he introduces the idea of the 'cognitive division of labor' defining it as 'the division of production processes according to the nature of the blocks of knowledge that are mobilized' (MOUHOUD, 2002).

The differentiation of the skilled workforce is intimately linked to the expansion of higher education: scholars have described the expansion of higher education as a process of *inclusion*, because access to education is able to improve the opportunities for social mobility of individuals despite it being a highly hierarchical system (DOUGHERTY, 1994). For Gabriele Ballarino and Daniele Checchi, higher education expansion increases competition among educational institutions to attract students by lowering the threshold for admission (BALLARINO, CHECCHI, 2006); according to this logic, massification denotes primarily a process of *inclusion*, even if expansion is associated with differentiation. The segmentation of manpower based on simply inclusion or its opposite, that is *exclusion* to education, is

becoming less important with the current increase in the number of graduate students[37].

The expansion of higher education is associated with the 'cognitive' differentiation: a new way to think the classical stratification by using a categorical variable (that is nominal or qualitative) rather than a metric one.

In China and Hong Kong we are confronted by a process able to stratify, divide and produce hierarchies by *labels*. This heterogeneous order 'displaces' the process of segmentation and differentiation *within* the 'matrix' of the educational system. From this point of view, the expansion of higher education is an important process that redefines the classical alternatives of inclusion *or* exclusion: this opposition lost its heuristic validity when exclusion seems to disappear as a practice. At the same time, the progressive stratification of the higher education system, going hand in hand with its

[37] Marco Bascetta, in an article that attempted to study the educational system and its connection with the world of work, affirms that: 'Until the recent past, the system of higher education was based on the transmission of specific functions and roles, associated with the productive and reproductive system, quantitatively determined and programmed over time [...]. The planning was made possible by the relative stability of the division of labor and by the direct proportionality between economic development and the growth of intellectual and manual jobs, the skilled and general workforce' (Bascetta, 2001). The 'recent past' described by Marco Bascetta refers to the industrial capitalism characterised by the Fordist factory specialised in the production of standardised mass commodities. It was marked by a sharp polarization of knowledge; a separation between intellectual and manual labour. In the so-called era of Fordism the 'scientific organization' within the factory reinforced the social segmentation of the workforce, which was reproduced through access to education. The access to skilled labour (which corresponds to a high social status and high salary) was obtained through access to education: 'formal education becomes an entry requirement for a job that is relatively complex and with a certain social significance' (Ballarino, Checchi, 2006). Education was the device used to reproduce the scientific division of labour and by which the workforce was segmented; exclusion or inclusion in respect to education is what maintained and reproduced the 'centrality of the factory' within society and its disciplinary power in Europe in the last century (Bourdieu, Passeron, 1970).

expansion, indicates to us that we ought to focus on the changing shape of the inclusion mechanism.

I introduce the concept of *differential inclusion* to give an account of how inclusion has been transformed within the current expansion of higher education: it allows us to better understand the implicit mechanisms of the internal stratification of the skilled workforce, which occurs on the basis of knowledge.

This concept has a complex and multiform genealogy that crosses different field of studies: from one side the idea of differential inclusion is very close to the concept of *diversion,* that has been introduced in the late 80s to describe how 'members of the working class are diverted from elite opportunities and are channelled to positions of low status' (BRINT, KARABEL, 1989). According to this view, when tertiary education expands there is an increase of differences between social classes with respect to the *type* of tertiary education that people can access[38].

From another side the *different inclusion* refers to the meaning of *foreclosure*, that is the translation of the Freudian *Verwerfung* made by Lacan and used by Gayatri Chakravorty Spivak in her *Critique of postcolonial reason*. She wrote:

> foreclosure relates to a Freudian 'primary process' embodying two complementary operations: the *Einbeziehung ins Ich*, introduction into the subject, and the *Ausstoflung aus dem Ich*, expulsion from the subject. (SPIVAK, 1999)

[38] Related to this idea, Shlomo Swirski (1999) in analysing the transformation of higher education, has noted that the tertiary education becomes more selective, leading to an increasing inequality between access for different social classes as a consequence of the expansion of the secondary school.

As we can see, the meaning of 'foreclosure' refers first of all to the coexistence of two simultaneous mechanisms: inclusion (*Einbeziehung ins Ich*) and expulsion (*Ausstoflung aus dem Ich)*. NICHOLAS DE GENOVA (2004) applied the concept of 'differential inclusion' in the field of migration studies, in order to study the issue of state citizenship within the constituent process of the European Union (EU). Focusing on the policies and the techniques used to control the migrant labour force and their access to state citizenship, the concept of differential inclusion points to the multifarious mechanisms that filter and stratify subjects in motion.

It refers to the emergence of different degrees of internality and externality, which substitute and blur the clear-cut distinction between inside and outside that was produced by the traditional border of the nation-state (MEZZADRA, NEILSON 2010). At the same time, for Rutvica Andrijasevic 'differential inclusion' represents not only the coexistence of inclusion and expulsion, but is important because 'it brings to the fore the stratification and proliferation of subject positions' (ANDRIJASEVIC, 2009).[39]

In this kind of overlapping between the classical sociology of education and the recent research about migration and social mobility, the differential inclusion in the higher education expansion explain the new stratification of the skilled workforce through the space of higher education, suggesting a

[39] This aspect of the differential inclusion emerged out of studying the freedom of people to move between central and eastern Europe and the former Soviet Union in the post-1989 period. Rutvica Andrijasevic discovers that these fluxes 'have been changed and remapped via the EU enlargement process that has put in place a regime of differential mobility depending on the country's membership status in the EU. Accordingly, areas adjacent to the EU are being organized into spaces that are hierarchically differentiated through a set of devices and measures aimed at governing people's mobility' (Andrijasevic, 2009).

sort of *non-linear modularisation* related to the displacement and the multiplication of filters and borders. This concept is useful for describing and analyzing how the access can be subject to varying degrees of subordination, rule, discrimination, and segmentation. In this way the massification of higher education became an important device in the filtering, restriction, and return of population around a whole set of internal borders based of knowledge.

Looking at the increase of second-tier universities and colleges that coexist with key universities and the special university institutions in the expansion of higher education described above, what emerges vividly is the increasing segmentation and stratification implied in this process. It refers to a complex systems of bordering that internally divide the global knowledge market, setting up dispositive of restrictions and filters.

From a certain point of view it is possible to understand differential inclusion as a sort of *modulation*, that is *a particular tone of inclusion*. If clear and rigid borders have characterised the disciplinary society (DELEUZE, 1994), today borders are still operative, although they are taking on a new shape. The current massification of higher education in East Asia is characterised by a multiplication of borders, 'immaterial boundaries' and perimeters between different universities and colleges, between alternative institutions of tertiary education, thus redefining deeply the governance of population. As a result it multiplies and increasingly stratifies the statuses of subjects inhabiting the region, 'while at the same time allowing an effective policing of the borders and boundaries between these different subject positions' (MEZZADRA, NEILSON 2012).

The current massification of higher education studied in this chapter defines and detects the social position of population in a sort of 'open-environment'

where its ranking in the hierarchy, as well as its segmentation, is happening not on the threshold of the inside/outside but rather within the inclusion process that is dealing with the globalisation of knowledge production.

CHAPTER TWO

THE TRANSFORMATION OF HIGHER EDUCATION: ITS EFFECT ON WAGES AND SOCIAL MOBILITY

2.1 HIGHER EDUCATION, SOCIAL MOBILITY AND THE LABOUR MARKET

Exploring the relationship between education, productivity and income

In this chapter, I will explore the transformation of higher education in relation to social mobility, linking together the emerging global market for education with the labour market. Several studies from different approach have already contributed to this field of research: some of them are based on functionalist assumptions (BELL, 1974; CLARK, 1962), others on techno-functionalist theories (DAVIS, MOORE, 1945; COLEMan, 1994) or on a social reproduction hypothesis (BOWLES, GINTIS, 1976; BOURDIEU, PASSERON, 1970).
Education is surely one of the most important recognised factors affecting social mobility (BLAU, DUNCAN, 1967; GOLDTHORPE, 1987). There are two aspects of mobility that I want to focus on in this chapter: the socio-economic aspect and professional life. In academic disciplines the observation and measurement of these characteristics of social mobility has involved the use of empirical indicators which, *grosso modo*, can be aligned with that of income because it is easily measurable and observable (GALLINO, 2006). Moreover, it is possible to identify two directions of social mobility: vertical and horizontal (GALLINO, 2006). There is vertical mobility if it is between one

layer and another of a stratified and hierarchised system; it could be ascending if it refers to increase of income and socio-economic status of subjects, while downward mobility is associated with a decrease in the value of these indicators.[40]

According to the early theory of human capital developed in the 1960s, education is considered to be a powerful factor that influences upward mobility: the amount of formal education affects directly both income and employment status[41]. The most relevant assumption of this theory is that education is an investment, not an expenditure (SCHULTZ, 1961); education cannot be counted among other kinds of consumption, because it is a kind of capital:

> expenditures on education, training, medical care, etc., are investments in capital. However, these produce human, not physical or financial, capital because you cannot separate a person from his or her knowledge, skills, health, or values the way it is possible to move financial and physical assets while the owner stays put. (BECKER, 1964)

[40] There is horizontal or lateral mobility if subjects continue to occupy the same layer, it refers to movement among occupational categories that does not result in an improvement in occupational status (Marshall, 1998).

[41] The human capital theory was elaborated during the 1960s in the US, and its appearance is usually traced back to the Presidential Address of Theodore Shultz at the American Economic Association of 1960 (Benadusi, 1984). In this chapter, I will explore only one of its aspects, namely the positive correlation between formal education, productivity and income, rather than exposing this theory in exhaustive terms. I will not take into account the wide debate that, since the early 1960s, this important approach has produced in both economics and the social sciences. The authors I refer to in writing about the human capital theory are: Theodore Schultz, Malcom Bowman, Mark Blaug, Gary Becker, and Jacob Mincer.

So, education is able to guarantee a certain economic return: this is the general thesis of the human capital theory[42]. According to Gary Becker: 'Human capital analysis assumes that schooling raises earnings and productivity mainly by providing knowledge, skills, and a way of analyzing problems' (BECKER, 1964). Mark Blaug summarises the link between education and earnings by stating that:

> the simplest explanation of the universal association between education and earnings across sectors, industries and occupational categories around the world is that the better educated are [...] more productive than the less educated, even when their education has taught them no specific skills. (BLAUG, 1972)

According to this theoretical framework, education increases the general productivity of the workforce and this is recognised by the labour market that reflects an increase in the efficiency of the productive process; this means at the same time a growth in the profits for an employer who is thus able to pay a higher salary. There emerges, therefore, a close interrelationship between education, employment, productivity and income: the larger the education and the human capital accumulated, the greater the productivity and income, and this results in better jobs. According to Ugo Trivellato there are three main propositions of the human capital theory on education, based on the utilitarian and neo-classical conception of economic equilibrium as a result of the action of rational subjects (TRIVELLATO, 1979):

[42] Choosing education, sustaining its direct cost (fees, book purchases, living costs) and indirect expenditure (the temporary absence of income while studying) is an investment to gain high income in the future (Becker, 1964).

a) Education is a key component of human capital, it has a positive return and, like other factors of production, is rewarded by the market.
b) The remuneration of human capital is given by the wage which, in conditions of perfect capital markets, it is like an indicator of productivity.
c) Different wages correspond to different educational levels, so it is possible to estimate the contribution of education to social mobility.

Jacob Mincer and Gary Becker provide an explanation that links education to workers' wages through some linear regression models. To define the return to education and the 'optimal investment in human capital', they assume wages as a function of human capital, influenced by the years of education (t), in this model the return to education is measured by the years of education variable. According to MINCER (1974):

$$w_t = r_t^H H_t$$

w=wage

r= rate of return to Human Capital

H= Stock of Human Capital

T= periods - complete information

This basic assumption that links education and wages is at the same time the cause of the expansion of higher education (BECKER, 1964): consistent with the neoclassical marginalist model of economy, the expansion of higher education could be explained as an aggregation of individual choices that are completely rational and based on the grounds of the cost benefit analysis. In this framework the positive correlation between acquired education and

income is important information orientating individual choices and the decision to 'invest' in education.

Since its origin, the human capital theories on education has been further developed and applied to extremely diverse and heterogeneous cases; nowadays there are several studies focusing on models for measuring and forecasting the return to education, in particular within the great transformation in Asia. Some of these researchers have fuelled the economic literature developing and refining models to forecast the relationship between education, income and labour force productivity by introducing new variables in their regression analysis. For instance, based on GEORGE PSACHAROPOULOS' works (1985; 1994) a line of investigation was set up that compares and analyses the return to education in 'developed' and 'developing' countries. In China, in particular, different scholars focused on measuring different rates of return to education from rural and urban areas (LIU ZHIQIANG, 1998; LINXIU, JIKUN, 2002; XIAOGANG WU, YU XIE, 2003). Others have focused on different rates of return related to gender (SHU, 2003), or between members of the Communist party compared with non-members, between workers in the private sector and the public sector (XIE, 2004). Others still have concentrated on changes during the course of the market reform era, finding different values for different historical periods. It is a rich vein of studies, many of which will be used in this chapter.

From the 'credential inflation' theory to 'credential hyperinflation'

The theory of 'credential inflation', introduced by RANDALL COLLINS (1979), allows us to explore the effects of the expansion of higher education on

wages and the professional life of neo-graduates, problematising the positive correlation between education and upward mobility and throwing light on the relation between education, productivity and income.

'Credential inflation' theory comes from empirical studies on employment conditions of graduates in the mid-1970s when the US labour market was characterised by the increase in unemployment among graduates and the deterioration of working conditions for skilled workers with an academic qualification.[43] Starting from this picture, RANDALL COLLINS (1979), MICHAEL A. SPENCE (1973) and FRIEDRICH HIRSH (1977) analysed the impact of the massification of education, putting in crisis the assumptions of human capital theory, that is the positive correlation between education and wage.

In particular, Collins worked on the assumption that the functioning of the labour market was based on credentials rather than perfect competition and the productive capacity of the workforce (BROWN, 2001).[44] In accordance with this premise 'positions within the occupational structure are filled by those who have obtained their qualifications through institutional mechanisms (e.g., education within certified schools; successful completion of formal examinations) culminating in the attainment of degrees, diplomas, or certificates' (COLLINS, 1979). In the efficacious words of Richard T. Boylan:

> People with more education make more money. Neoclassical economists (such as Becker or Mincer) argue that this statement is true either because education makes people more productive; or because it is an indicator of

[43] Later Collins will resume the theme of 'credential inflation' through a historical study about the Chinese educational system in 1000 AD, and in Japan in 1400 AD (Collins, 1998).

[44] For this scholar 'credentialism' refers to reliance upon formal credentials conferred by educational institutions, professional organisations, and other associations 'as a principal means to determine the qualifications of individuals to perform a range of particular occupational tasks' (Brown, 2001).

> productivity. Credentialists, in contrast, hold that education matters because it confers status, which group and individuals use in competing for income and other rewards. (BOYLAN, 1993)

Starting from this critical assumption of the human capital theory, Randall Collins introduces the 'credential inflation' theory to explain the unemployment of graduates in the US labour market as an effect of the expansion of higher education. The 'inflation of education credentials' relates the rising unemployment of skilled manpower to the increasing quantity of degrees in circulation. This theory compares the increase of numbers of degrees to economic inflation where the amount of money in circulation decreases the unit value of a currency:

> as the number of persons with academic degrees has gone up, the occupational level for which they have provided qualifications has declined. […] Most degrees have little substantive value in themselves; they are bureaucratic markers channelling access to the point at which they are cashed in, and guaranteeing nothing about their value at the point at which they are cashed. (COLLINS, 2002)

It seems that despite studying being considered a necessity to enter the labour market, at the same time this is not a guarantee that it will increase income, meaning that it is unable to positively affect upward mobility. As Lester Thurow and Robert Lucas wrote in *The American distribution of income*:

> [Studying] becomes a defensive necessity to private individuals. [...] Education becomes a good investment not because it would raise an individual's income above what it would have been if no one had

> increased their education, but because it raises their income above what it will be if others acquire an education and they not. (LUCAS,THUROW, 1972)

In other words, the expansion of education decreased the influence on upward mobility because the more students hold an inflated qualification, the less is the value of their credentials. Whilst the theory of human capital described the process of expansion of education through so-called 'upskilling' (BECKER, 1964) that means a virtuous circle that links education, increasing of social productivity and the overall income received by the skilled workforce, the credential inflation theory shows that the same progressive increase in the number of skilled workforce is matched by a consecutive deterioration of working conditions and bargaining power. This sort of study has reached levels of considerable theoretical and scientific interest in those countries where this phenomenon was predominantly intense since the late 1960s.

In Asia, and particularly in China, anthropological and ethnographic qualitative surveys on living and working conditions have been rapidly growing in recent years. Despite their very different methodological orientation, they adopt an original approach and give a new vitality to the issue first studied by credential inflation theory. Of great importance is undoubtedly the work of LIAN SI (2009, 2011), which through two recent studies has analysed the process of impoverishment of young Chinese graduates who live in large cities. His first research *The ant tribe* (SI, 2009) is a survey conducted at the heart of the so-called 'Silicon valley of Beijing'. His second body of research *Ant tribe II whose era was it?* (SI, 2011) is an in-depth study of the first one, made with more than seven thousand

interviews conducted in the field in about two years.[45] It describes a sort of 'credential hyperinflation' during the current massification of higher education, where the scale of this transformation in China is intertwined with the emergence of a new economy of its metropolitan services. Both these bodies of research, as I will show later in this chapter, describe the increasing difficulties that young graduates from the so-called second-tier Chinese universities[46] are experiencing in the labour market. Job insecurity, de-qualification and the fact that many of their jobs are not related to their study skills seems to be the effect of the hyperinflation degree on the millions of new 'neo-graduates' who enter the job market annually.

While I will describe in more detail these aspect of the Chinese labour market in the next sections of this chapter, right now I will explore the so-called signaling theory by which is possible to introduce the variable of 'quality' of knowledge, thus deepening the relation between education and social mobility.

[45] These surveys are only in Chinese, not yet translated into English.

[46] The second-tier Chinese universities are educational institutions that may be ranked in the bottom 25 percent of the classification made by a certain national or global ranking of universities. It means that they occupy the lower position in the list.

The Signalling theory

Signalling theory (SPENCE, 1973) or screening theory is based on certain assumptions of 'credentialism' and was theorised to investigate the relation between education and the labour market within the same framework described by the 'degree inflation' theory.[47] Following Li FengLiang, Ding Xiaohao and W. John Morgan it is possible to define at least two versions of this theory: the weak screening hypothesis (WSH) and the strong screening hypothesis (SSH). According to the latter, 'education has a pure and exclusive informational function'; while the weak screening hypothesis (WSH) argues that 'schooling may have a productivity enhancing as well as a signalling role' (FENGLIANG, XIAOHAO, MORGAN, 2009). According to the strong screening hypothesis the labour market is not perfectly competitive and entry into it is not linear; for that reason employers use the available information to select and filter the workforce. They use information

> that they can easily obtain – age, sex, race, educational credentials, etc – and apply what they have learned from past experience to infer the "conditional probability of competence" of an individual. (BLAUG, 1970)

The economist Michael Spence had pointed out that employers value educational degrees not because they believe that the

[47] Spence (1973) wrote about the expansion of education systems and how the increasing numbers of degrees reduce the signalling power of the qualification which loses its effectiveness in the labour market.

> degree truthfully reflect(s) the candidate's expertise, but because, without any other information, they take the degree as a ''signal'' of the candidate's general competence. (SPENCE, 1974)

So the screening hypothesis is based on the informative value of education to select and evaluate the workforce, matching supply and demand on the labour market.

However, as I have previously shown when describing degree inflation, education loses its signalling value due to the expansion of higher education and the increase in the number of graduates. When the value of the qualification is low and inflated, the signalling process takes place through others fields of information, such as the 'quality' of education and degree related to the universities and institutions which provide them (BIAO, SHEN, 2009).

Within this framework it is possible to explain the growing importance of both national and global university rankings, that are considered as an important signalling device about the 'quality' of education (CHEN, 2007; LAWRENCE, 2009; SALMI, SAROYAN, 2007). ELLEN HAZELKORN (2011) reported on a study that showed how employers, in selecting candidates

> rely strongly on institutional reputation gained via rankings: 25 percent of graduate recruiters interviewed by this research cited league tables as their main source of information. (SHEPHERD, 2005, in HAZELKORN, 2011)

Thinking about the Academic Ranking of World Universities (ARWU), the Quacquarelli Symonds World University Rankings (QS) rather than the Times Higher Education World University Ranking Thompson Reuters

(THE-TR): these apparatus are regarded to have a signalling power, 'rankings act as signals' of 'knowledge quality' (HUSSAIN, MCNALLY, TELHAJ, 2009)[48].

Since the early 1960s there has been a growing number of new rankings that are working at national, regional and global levels (WEBSTER, 1986; HAZELKORN, 2011). They are considered to be an important source of information for mass education:

> We define a league table as a published set of quantitative data designed to present comparative evidence regarding the quality [...] of universities. (ROBERTS, THOMPSON, 2007)

Rankings work as an 'abstract measure of academic quality', and they 'emphasize quantification as a proxy for quality' (GRILLO, 2010).

Moreover, rankings are signalling devices not only for employers, but also and especially for students: a survey about student's decision-making has shown great attention to the 'quality' of degree and university (LAWRENCE, 2009; WEBSTER, 2001; SAUDER, 2006). What is considered important and strategic is the quality of education linked to the name of the institution that provides the degree. This is because

> the quality of institution attended has a payoff in the labour market in terms of subsequent wages: institutional quality has a significantly positive impact on earnings. (HUSSAIN, 2009)

[48] ARWU, (Shanghai Jiao Tong, China) www.arwu.org; QS, (UK) www.topuniversities.com/university-rankings/world-university-rankings; THE-TR [UK] www.timeshigher-education.co.uk/world-university-rankings.

But what is exactly meant by 'quality'? To answer these questions it is useful to start from the studies of Chen Liang-Hsuan and Ellen Hazelkorn, which, among others, have made visible how today the 'quality' of knowledge and education is something that is linked to the prestige and the reputation of the university which confers the degree. Ellen Hazelkorn has reported a recent survey of over 95,000 students (representing over 200 different nationalities who had chosen to attend institutions in the UK, the Netherlands, US, Australia and Germany) that indicates that 'of the top five factors influencing student choice, four pertain directly to reputation' whilst 'position in a league table/ranking also features highly on their list of priorities' (HAZELKORN, 2011). From *Table 2* below it is clear that, according to this survey, 'reputation and quality of the qualification' is considered the most valuable factor for career opportunities, while ranking is becoming one of the most important tools for decision-making in the current massification of higher education.

Table 2: Top ten most important factors influencing student choice

Priority	*Factor*	*Mean Score*
1	Quality of Teaching	3.74
2	Reputation (value in my career) of a qualification	3.55
3	Institution reputation	3.44
4	Quality of Research	3.42
5	Department Reputation	3.33
6	Personal Safety and Security	3.24
7	Cost of Education/tuition fees	3.21
8	Country	3.18

9	Position in league table/ranking	3.13
10	Specific course title	3.09

Source: INTERNATIONAL GRADUATE INSIGHT GROUP LTD. (I-GRADUATE), 2010, in HAZELKORN 2011

In another survey conducted by Chen Liang-Hsuan, it emerged that students in Asia are the ones who place the most emphasis on 'rankings and reputation' in orienting their study choices with a view to their professional career (CHEN, 2007).

We are entering into an educational system that appears to be vertically stratified, where there is visibly an increasing interweaving between quality of knowledge and reputation of institution, that is to say, its position in the hierarchised higher education system. Dominic Brewer, Susan Gates and Charles Goldman write that reputation and prestige are becoming more and more strategic assets in higher education: 'reputation is built over time and can be tested, while prestige is intangible and may be based on opinion or perception' (BREWER, GATES, GOLDMAN 2001). It seems that in contemporary global knowledge production the reputation (which derives from the history of institutions and its past) is linked to prestige (something highly intangible and immaterial) in defining the 'quality' of education and degree. For that reason it is necessary to investigate the relationship between social mobility and education in this complex interweaving.

The Reputation and its measure within an academic context

'Reputation is a critical asset for all providers of high value intangible services, and is particularly important for [...] education' (ROBERTS, THOMPSON, 2007). So, what is 'reputation' exactly?

Gero Federkel, in a study on this issue, discusses the analysis performed by Niklas Luhmann on the social system of science who described reputation as 'the "second selective code" in the system of science/higher education besides the basic distinction of false–true as the guiding difference in the system of science' (LUHMANN, 1992 in FEDERKEIL, 2009). 'Reputation on the positive side refers to the first communication of new knowledge and, on the negative side, to the lack of that achievement' (FEDERKEIL, 2009). One could argue that reputation is a communicative means that reduces the complexity of information, making subjects able to orient themselves in a system.

According to Robert Wilson the notion of reputation refers to 'a characteristic or attribute ascribed to one person by another' (WILSON, 1985) and:

> it is usually represented as a prediction about likely future behaviour. It is however, primarily an empirical statement: its predictive power depends on the supposition that past behaviour is indicative of future behaviour. (WILSON, 1985)

Therefore, it is something related to the past: assessment of past experience serves as a tool to foresee or imagine future expectations. Moreover, from Wilson's definition it is possible to affirm that reputation is an opinion

referring to a particular social group: 'reputation refers to the social ascription of some characteristics by particular groups of people' (FEDERKEIL, 2009).

In the 'wild world' of education there are many rankings based on the measure of reputation, and certainly the Quacquarelli Symonds World University Rankings (QS) is one composed by the weightiest indicators concerning this aspect (see *Table 3*). Because the measurement is about opinion, a judgment, usually indicators are surveys and interviews conducted in specific social groups such as faculty peers and key stakeholders. Looking more closely at the case of the QS, it is possible to observe two different indicators of reputation:

a) the academic peer review

b) the employer review

that together they make up for 50 per cent of the overall score.

Table 3: Quacquarelli Symonds World University Rankings (QS)

Ranking	*Year*	*Description*	*Indicator and Weightings*	*%*
Quacquarelli Symonds World University Rankings (QS)	2010	The new QS ranking draws data from 4 different sources: * Over 2,000 universities in 130 Countries * Citation and papers for each university produced from Elsevier's Scopus Database *Global survey of academics will collect at least 200,000 data items per annum *Global survey of an estimated 5,000 employers	*Academic peer review *Employer review *International Faculty ratio *International student ratio *Student faculty ratio *Citation per Faculty (citation data supplied by Scopus)	40 10 20 5 5 20

Source: HAZELKORN, 2011

The indicator 'academic peer review', that composes the 'academic reputation index' is the 'centrepiece of the QS World University Rankings' and carries a weighting of 40 percent.[49]

It is based on a survey of selected academics, whom are asked to indentify up to ten domestic institutions and up to thirty international institutions they consider best for research within the regions and faculty area that respondents have most familiarity with (see the descriptive sheet in *Table 4* below). In 2010 this Academic Reputation Index was comprised a total of 15,050 responses.[50]

The indicator 'employer review', which composes the 'employer reputation index' carries a weighting of 10 percent; it takes into consideration the issue of neo-graduates employability, a dimension that is quite important because, as the official site of QS ranking reports: 'the majority of undergraduate students leave university in search of employment after their first degree, making the reputation of their university among employers a crucial consideration'.[51] The survey similarly asks the employer to identify up to ten domestic institutions they consider best for research within the regions and faculty area that the respondents have most familiarity with. Moreover respondents are asked to identify up to thirty international institutions they consider best for recruiting graduates (see *Table 5* below).

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[49] From the website of QS: www.topuniversities.com

[50] From the website of QS: www.topuniversities.com/univerities

[51] The QS Employer Survey has been running since 1990 and has contributed to a number of key research initiatives operated by the QS Intelligence Unit including the QS TopMBA Salary & Recruitment Trends Report and the TopMBA Global 200 Business Schools.

Table 4: Academic Reputation Index

1. Personal Details

Name, Institution, Job Title & Classification, Department, Years in Academia

2. Knowledge Specification

Country – respondents are requested to indicate which country they have most familiarity with rather than the country where they are based. This enables new international faculty members to comment on their sphere of knowledge rather than speculate on an area they may yet know little about.

Region – regional knowledge responses are grouped into three supersets that define the list of institutions from which the respondent can select, these are Americas; Asia, Australia & New Zealand; and Europe, Middle East & Africa

Faculty Area – respondents are asked to select one or more faculty areas in which they consider their expertise to lie. These are Arts & Humanities; Engineering & Technology; Life Sciences & Medicine; Natural Sciences; and Social Sciences. Sections 3 and 4 below are repeated for each faculty area selected.

Field – respondents are asked to select up to two specific fields that best define their academic expertise

3. Top Domestic Institutions

Respondents are asked to identify up to ten domestic institutions they consider best for research in each of the faculty areas selected in Section 2. Their own institution, if it would otherwise be included, is excluded from the presented list.

4. Top International Institutions

Respondents are asked to identify up to thirty international institutions they consider best for research in each of the faculty areas selected in Section 2. Their own institution, if it would otherwise be included, is excluded from the presented list. The list consists solely of institutions from the region(s) with which they express familiarity in section 2.

5. Additional Information

We use this section to gather additional information from respondents, such as feedback on previous publications and the importance of various measures in evaluating universities.

Source: topuniversities.com/university-rankings/world-university-rankings/methodology/academic-reputation-index

Table 5: Employer Reputation Index, the survey

1. Personal Details

Name, Company, Job Title, Department, Sector, Recruitment Responsibility

2. Knowledge Specification

Country – respondents are requested to tell us which country they have most familiarity with rather than the country where they are based. This enables new international faculty

members to comment on their sphere of knowledge rather than speculate on an area they may yet know little about.
Region – regional knowledge responses are grouped into three supersets that define the list of institutions from which the respondent can select, these are Americas; Asia, Australia & New Zealand; and Europe, Middle East & Africa

3. Top Domestic Institutions

Respondents are asked to identify up to ten domestic institutions they consider best for research in each of the faculty areas selected in Section 2.

4. Top International Institutions

Respondents are asked to identify up to thirty international institutions they consider best for recruiting graduates. The list consists solely of institutions from the region(s) with which they express familiarity in section 2.

5. Additional Information

We use this section to gather additional information from respondents, such as recruitment priorities, volumes and preferences

Source: topuniversities.com/university-rankings/world-university-rankings/methodology/employer-reputation-index

Parallel to the growing popularity of this sort of measure, there is an equal amount of criticism addressed at the methodology of this assessment. In particular SONJA BERGHOFF and GERO FEDERKEIL (2006), MICHAEL N. BASTEDO and NICHOLAS A. BOWMAN (2009) argue that these kind of indicators are 'subjective' and 'self-referential' compared to the citation analysis and the scientometrics data, which on the contrary, provide objective results in determining the quality both of education and knowledge.[52]

[52] The weakness of this measure is associated with the modalities with which subjects have to choose among several universities for the survey. According to Bowman and Bastedo answering to these demands 'most people start with a particular value that is available to them, and then adjust their final judgement accordingly. This phenomenon is known as the 'anchoring effect' (Bastedo, Bowman, 2009). Moreover, for Webster, faculty and other peers 'tend to rank high those departments of the same type, and with the same emphases, as their own universities' (Webster, 2001). For these reasons the reputational surveys are not only 'prone to being subjective', but are also 'self-referential and self-perpetuating' (Hazelkorn, 2011).

Other scholars, like ANTHONY VAN RAAN (2005), TONY BECHER and PAUL TROWLER (2001), MICHAEL SAUDER and RYON LANCASTER (2006) have stressed that reputation indicators are oriented to the past instead of the present and future; this implies that these indexes of QS tend to maintain a conception of a system that is stable and self-perpetuating, rather than identifying its different aspects and its dynamics of change.[53]

Although there is much more to add on this sort of measure and its critical aspects, what I would like to illustrate here is the consequence of the fact that the results obtained from these indicators are released through the format of the 'League Table' and its hierarchies. According to Alex Usher and Massimo Savino, the clear-cut ordinal positions of university rankings:

> are lists of certain groupings of institutions comparatively ranked according to a common set of indicators in descending order. [...] They are presented in the format of a "league table," much as sports teams in a single league are listed from best to worst according to the number of wins and losses they have achieved; they are designed specifically as a comparative measure, pitting institutions against each other. (USHER, SAVINO, 2006)

Reputation becomes primarily defined from the position that a certain institution occupies in the vertical hierarchy made by the ranking itself, thus acquiring a value that is not absolute but *relative*.

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[53] This is because on the one hand reputation, which is an expression of social networks, tends to remain rather stable over time – in particular with regard to the one-year intervals of many rankings (Federkeil, 2009). On the other hand, as Van Raan points out 'institutions with an established reputation are strong in maintaining their position'. They simply have the best possibilities to attract the best people, and this mechanism 'provides these renowned institutions with a cumulative advantage to further reinforce their research performance' (Van Raan, 2005).

A useful model to understand the value of reputation represented in this way is the 'positional goods' theory of Friedrich Hirsch, according to which the value of any asset, in our case reputation, is always relative rather than absolute. The research into the production of 'social scarcity' made by Hirsh has the advantage of showing us the importance that the hierarchical dimension is assuming, that is the qualitative, or 'relative' dimension of any asset (HIRSH, 1977): in our case, the value of reputation is 'embedded' in the position that institutions occupy, and for this reason it is evaluated in relation to other positions filled by other educational institutions (KASHDAN, KLEIN, 2006).

It is possible to further explore this relative dimension of value through the work of Thorstein Veblen on the concept of status. This author, in his famous book *The theory of the leisure class* of 1899, introduced into the discipline of sociology the idea of status as a relational concept: this means that 'status does not inhere in any particular characteristic an actor possesses but it is in the relationship between two actors'. Status, for Veblen, is something that is 'always necessarily comparative, relative, and reciprocal' (SAUDER, 2006). As Veblen wrote: 'it is the relative value of any good, quality, or achievement from which status is derived' (VEBLEN, 2007). According to this analysis, one could affirm that reputation is increasingly interwoven with the proprieties of 'status': this means that reputation ceases to be a particular characteristic possessed by an institution and becomes something that is expressed in the relation between two institutions or more.

Rankings, which act like a signalling of education's quality, create a new scenario characterized by the overlapping between reputation and status. While I showed above that quality of education is related to the reputation of

a university, it is now possible to go deeper affirming that the same quality of education is assuming a relative and relational dimension.

This is realised primarily by emphasising the differences, however small, that exist between institutions that occupy different positions. According to GERO FEDERKEIL (2006), rankings 'tend to exaggerate the differences between institutions', while for Michael Sauder and Ryon Lancaster, rankings not only 'amplify small differences between schools', but they also 'create differences among schools that did not exist previously' (SAUDER, LANCASTER, 2006). The models of Michael Sauder (below) are useful for understanding this process:

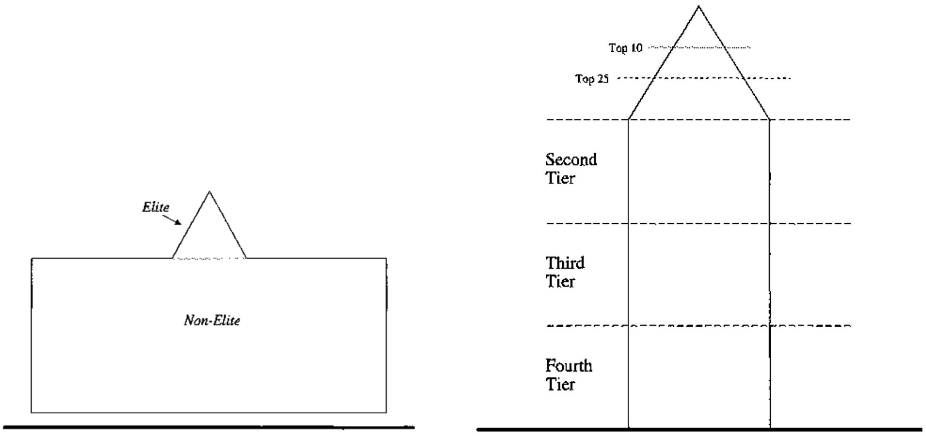

Figure 9: two models of the institutional differentiation (SAUDER, 2006)

The left figure shows the institutional differentiation without any ranking information; the educational system as a whole is composed of a small group of institutions, considered 'elite' universities, which stand on a block that is homogeneous and almost undifferentiated: the body of the non-elite universities. The right figure shows how this classical scheme is transformed through the information provided by rankings.

First of all it is possible to observe that ranking involves a progressive vertical integration of the system as a whole: it becomes 'more vertical, thus

creating more levels of distinction, that is more distance, between the top and the bottom of the system' (SAUDER, 2006). Moreover this distance is further accentuated by the lower layers, namely the creation of the third and fourth tiers, where the 'bad universities' are placed.

In this way 'the ranking promotes the idea that many universities are "below average" and some very much so' (SAUDER, 2006).

Secondly the distances between universities, what separates one university from another, becomes something vivid, sharp, and clear cut:

> there are fairly hard lines that separate, for example, the top 10 and the top 25 schools from the others and very hard lines that both separate the top 50 from the tiered schools while also partitioning the tiered schools from one other. (SAUDER, 2006)

There emerges a proliferation of differences that stratify the educational system, and the quality of education appears something more and more associated with the position in the hierarchy.

Returning to the signalling theory with which I began this section, it is possible to affirm that university rankings are original signalling devices: on the one hand they evidence the relative dimension of reputation; on the other, they make this relational dimension 'spectacular'. According to Gordon Chang and J. R. Osborn, who applied Guy Debord's theory of the spectacle to higher education, university rankings create powerful images of colleges and universities where 'students see an institution's place (i.e. its 'value') in the hierarchical order of a USN-created spectacular economy'

(CHANG, OSBORN, 2005), in these authors' analysis of the US News World Ranking.[54]

In this spectacular economy, quality of education, reputation and the academic institutional position are originally interwoven, becoming increasingly indistinguishable as well as determinants (in positive or negative terms) for the upward mobility of neo-graduates.

Therefore there results an even more complex relationship between education and social mobility in the depths of the radical transformations of the higher education system.

The Risk, the quality of education and the ranking

Trying to identify the origin of rankings used in the higher education, it is possible to affirm that these signalling devices were first set up in the financial sector, where rating agencies and the ranking of credit quality was established at the beginning of the last century.[55]

Their foundation is closely linked to the problem of the information asymmetries of the market (in particular the moral hazard and the adverse selection), which create inefficiencies in the match of supply and demand. The aim of rating agencies was to eliminate, or at least mitigate, the disparity

[54] USNWR www.usnews.com/rankings.

[55] Rating and the rating agencies are instruments born at the beginning of the twentieth century, and later expanded in the 1970s and 1980s, parallel with the neo-liberal deregulation of the financial sector especially in the US. Today the credit rating industry is experiencing a vigorous growth particularly in Asian and in American markets (Dacrema, 2008).

between 'information deficit' and 'information advantage' of economic actors (MILLON, MARCIA, THAKORE, ANJAN, 1985).

Following Moody's agency, credit rating is

> an independent opinion about credit risk. It is an assessment of the ability and willingness of an issuer of fixed-income securities to make full and timely payment of amounts due on the security over its life. (LANGOHR, LANGOHR, 2008)

According the agency S&P a credit rating is

> Standard & Poor's opinion of the general creditworthiness of an obligor, or the creditworthiness of an obligor with respect to a particular debt security or other financial obligation, based on relevant risk factors. (LANGOHR, LANGOHR, 2008)

What emerges from these definitions is that rating is an opinion (as well as a reputation) on credit quality, which is about the probability of incurring a risk of default. Then this assessment is translated into an alphanumeric value associated to an estimated probability of default that is ordered in a ranking: rating of A defines a risk profile that is lower than B, that is to say, the higher the ranking the lower the probability of default and vice-versa. The hierarchy of ranking could be divided into two segments or groups: the *speculative grade*, which corresponds to the lower position marked by the letter B and C, and the *investment grade*, that is the top of the ranking marked by letter A (DACREMA, 2008). Rating is 'risk management' that works through evaluation within the high unpredictability, insecurity and uncertainty of financial markets.

As well as the credit rating, the university ranking is another means of evaluation; having found its origin close to the financial rating it is a stimulus to short-circuit the 'quality of education' with 'risk management', this latter an aspect increasingly important not only in the finance sector but in everyday life, as confirmed by Ulrich Beck in his famous book *Risk society* (BECK, 1992).

So, quality of education and management of risk. What do these two fields have in common? What is the risk associated with the quality of education? What kind of risk management is under question when talking about the quality of education?

So far, the hypotheses that have emerged are that in a highly stratified higher education system the quality of education (associated with the name, reputation and ranking of the university) is the essential factor for upward mobility.

The quality of education, all qualifications being equal, is a guarantee for high economic return and salary, providing at the same time a warranty on graduates' employability.

If the risk refers to the conditions of indefinite uncertainty, insecurity and indeterminacy of the labour market (BECK, 2009), the 'quality' of the degree obtained by a neo-graduate might be measured by its ability to manage these economic and social dimensions.

If so, then investigating the risk related to education means questioning immediately the 'social distribution' of risk, that may be institutional/collective and supported by the prestige of university, or individual and not institutional, such as when the university's name is unable to shelter and defend the young workforce from the uncertainty of the future. From this point of view, different qualifications, released by

many different educational institutions can be considered to be a sort of *speculative degree* or *investment degree*. When the risks within the labour market that a neo-graduate is facing (such as unemployment, low wage, lack of social security, precariousness or over-qualification) are managed at the institutional level by the high-ranking position of the university in the hierarchy of the system, we speak of *investment degree*. In contrast, when the indeterminacy of the labour market has no institutional mediation and the social cost of this condition is placed on the shoulders of individual graduates, the *speculative degree* highlights the absence of any guarantee for upward mobility.

Interweaving the management of social risks and the 'quality of education' enables us to question the issue of social mobility as well as the correlation between wage, education and work through the idea of the institution itself, that is the collective management of the uncertainty of the future.

2.3 HIERARCHIES AND SOCIAL MOBILITY IN THE CHINESE LABOUR MARKET

In the previous section I showed that in conditions of 'inflation degree' what counts more and more for social mobility is the quality of education related to the prestige and reputation of institutions and the hierarchical position of the university. In the following pages, focusing on the Chinese labour market, I will report on three surveys that confirm this hypothesis.

I will take into account authors who have studied the 'return to education' in China; these studies have been conducted in the disciplines of economics and econometrics. In this section I will examine the works *Returns to higher education in China: What is the role of college quality?* by HAI ZHONG (2011); *The*

expansion of higher education, employment and over-education in China by FENGLIANG LI, JOHN MORGAN and XIAOHAO DING (2008), and the research *University rank and bachelor's labour market positions in China* by JOOP HARTOGA, YUZE SUNB, and XIAOHAO DINGB (2010).

As I showed in Chapter 1, since 1990 the fast expansion of Chinese higher education has resulted in the rapid differentiation of the educational system, which has become increasingly stratified. These studies seem to validate that the decisive factor for employment and high salary is not so much the level of qualification obtained. As Zhong wrote:

> despite most studies measuring education in terms of "quantity," using data on years of formal education or level of educational achievement, the estimated returns to higher education based on quantity of education alone can be misleading. (ZHONG, 2011)

According to Hai Zhong, a scholar who focuses on the relationship between earning and education among undergraduate students in China (divided into two basic categories: three-year college with a degree *da zhuan* and four-year university with a degree *da ben*), the formal degree obtained from universities located in the lower ranking positions seems to be decreasing in value in the labour market.

What emerges from Hai Zhong's study is the importance of what he calls 'quality' instead of 'quantity' of education in relation to wages: in this work the quality of education coincides with the position of the educational institution in the university hierarchy. Following the rankings of the Ministry of Education, which identify the top universities in China with the key universities of 211 and of 985 project institutions, the quality of

education assumes a hierarchical, relative and positional dimension: 'our measure of school quality is relative rather than absolute' (ZHONG, 2011).

Cross-checking data about the variable wage from the 2002 Chinese Household Income Project[56] with the data from this hierarchy, Zhuon has found a widening earnings gap among graduates from 'good' and 'poor' 'quality' institutions; returns to higher education vary significantly depending on the hierarchical position of the university in the ranking and:

> For 2002 the maximum earning gap between recipients of high- and low-quality higher education is 28 percent, and the gap for annual return is 1.4 percent […]. This relationship between earnings and school quality is stronger for newer working cohorts. As the date of entering the labor force changes from 1981 to 1986 to 1993 […] the gap in annual return increases from 2.3 percent to 2.7 percent to 3.2 percent, respectively. (ZHONG, 2011)

These findings demonstrate that rather than the qualification in itself, the university ranking, the name and reputation of the institution that released the degree are the most decisive elements, in positive or negative terms, for success in the labour market.

Moreover this research has displayed, through a Mincer-type human capital model, how in China the earning gap between students from lower-quality colleges and those from vocational/ technical schools is decreasing over time.

[56] The data used for this analysis comes from the 2002 Chinese Household Income Project (CHIP). The 2002 CHIP contains rich information on household and individual characteristics, including earnings, wages, subsidies, income, demographics, education, characteristics of the education received, job tenure, and characteristics related to the primary employer such as sector, location, size, and fringe benefits. This survey was carried out by a team of researchers from China under the direction of the Institute of Economics at the Chinese Academy of Social Sciences (Zhong, 2011).

The difference in terms of wages between those who have a professional degree and those who have an academic qualification provided by second-tier schools is narrowing and confirmation of this fact is steadly growing:

> the earning gap between lower quality colleges and vocational/technical schools appears to fall over time. For the working cohort that entered the workforce after 1993, the return to three-year college is just 8.2 percent higher than that to vocational/technical schools. This implies a 2.7 percent annual return to the three years spent in college, which is much lower than the 7.5 percent average annual return to education for this cohort. This result might be related to the rapid increase in the number of college graduates (ZHONG, 2011).

These results are very similar to those found in another survey conducted by Joop Hartoga, Yuze Sunb and Xiaohao Dingb. These scholars analyse the relationship between wage and educational qualifications among a group of neo-graduates with bachelor degrees they have obtained from different institutions that occupy different positions in the stratified Chinese higher education system[57].

This survey is based on the 2004 'Education and employment survey of people in urban China',[58] that the research team subsequently analysed,

[57] The Chinese educational system is characterised by the syncretism between key universities of the '211' and '985' projects (that is the top universities), and the other universities that occupied the second, third and fourth tiers of the hierarchy, most of them set up after 1999: this coexistence reflects different degrees of prestige and reputation of the same universities.

[58] This survey was conducted jointly by the Institute of Economics of Education of the Peking University and the National Bureau of Statistics of China. It was part of the regular survey of the National Statistical Bureau of China of that year and set up to be a representative sample of the urban population. The survey began in April 2005 and

showing the increasing incidence of ranking results of academic institutions on wages of graduates with bachelor degrees in China 'all qualifications being equal'.

Using a regression model similar to the basic Mincer earning equation, this research team has cross-checked the available data on workforce incomes with the variable 'ranking of university' where graduates obtained their certificate (the university ranking used by this research is developed by the China University Alumni Association Net).[59] This research starts from the basic presupposition that the rank of the university measures the quality of the graduates: again, quality is expressed in relative terms, and it is linked to the hierarchical position of the university institution.[60] The interesting finding that emerges from this survey is the direct correlation between the relative positions of universities and the wages of graduates:

> we have found a 'higher wage for bachelors who graduated from a university ranked in the top-100, but no significant differentiation within the top-100 universities' graduates.
>
> At the same time bachelors who have graduated from a university ranked between positions 400 and 500 in reputation for quality on average earn 23% less than bachelors from a top-100 university […] These are relevant magnitudes, and they can indeed explain why Chinese students, and their

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collected information relating to 2004; it covered 10,000 households in twelve provinces (Hartoga, Sunb, Dingb, 2010).

[59] See: www.cuaa.net/2005; the results of this ranking are almost the same as the QS ranking: topuniversities.com/university-rankings/asian-university-rankings/2011 (last access June 23, 2011)

[60] Their research is strictly based on the relationship between university ranking and wage; they write: 'we have no information on student quality when entering the university and we have no information on the quality of education other than that contained in our measure of university rank' (Hartoga, Sunb, Dingb, 2010).

> parents, put so much effort into attempts to enter top-ranking universities. (HARTOGA, SUNB, DINGB, 2010)

Finally, I will consider the survey of Fengliang Li, John Morgan and Xiaohao Ding who, without using the sophisticated econometrical techniques of the researchers above, have described the connections between the expansion of higher education and the labour market for graduates in contemporary China. They started from the data of a 2003 nationwide survey of 'higher education graduates seeking jobs': it is a significant piece of research because it took place exactly four years after the massive expansion of higher education in 1999, that is to say the most important phase (see Chapter 1)[61]. Using the empirical data of this survey, they analyse the Chinese job market for higher education graduates from the perspectives of a] job seeking, b] starting salaries and c] the comparative advantage of different types of graduate. They have found that:

> the reputation of the higher education institution has a significant and positive impact on employment: graduates from key universities have greater employment probabilities than their counterparts from ordinary universities. (FENGLIANG, MORGAN, XIAOHAO, 2009)

[61] In 2003, a nationwide survey on graduates was undertaken by the Graduate School of Education (GSE) and Peking University (PKU). The survey was geographically comprehensive covering East, Central and West China; Beijing, Guangdong, Guangxi, Hunan, Shandong, Shan'Xi, and Yunnan, that is seven provinces or municipalities. It included data on (1) public or private higher education institutions; (2) post-graduate students, under-graduate students and college students; and (3) different educational specialisations. By July 2003, a total of 18,722 valid questionnaires had been collected, of which 39.3 percent were college students, 57.0 percent undergraduate students and 3.7 percent post-graduate students (Fengliang, Morgan, Xiaohao, 2009).

Moreover they confirmed that the reputation of the institution has a significant and positive impact on salary. This research conclusion affirms that 'in China, as elsewhere, the quality and reputation of institutions will replace educational level as signal and screening mechanisms' (FENGLIANG, MORGAN, XIAOHAO, 2009).

The result of this research is a verification of my earlier claims about signalling theory: in a stratified education market, a degree from a reputable university carries a signalling power, which is like an 'antidote' against credential inflation. What is important to highlight 'is not the inflation of certificates or the divorce between diploma and real knowledge' (BIAO, SHEN, 2009), but precisely the opposite, namely the convertibility and close connections between symbolic, human, social and economic capital, and the resultant exclusiveness.

2.4. THE CHINESE LABOUR MARKET AND GRADUATES FROM THE SECOND-TIER UNIVERSITIES

The 'Ant tribe', the metropolis and the Verelendung

In recent years, important anthropological and ethnographic inquiries have investigated the relationship between education, the labour market and social mobility among neo-graduates from second-tier universities, that is institutions which occupy the lower tier of ranking. Such qualitative research has shown the emergence of a new form of poverty among the skilled workforce graduating from these universities. Within the progressive increase of the skilled workforce, due to the expansion of education, it is

possible to observe parallel processes of *overeducation* and *pauperization* of the workforce, unemployment as well as precariousness[62].

The sociologist Lian Si has recently published two books based on ethnographic research, which lasted over three years, into the social and economic lives of the new graduates. Since 2007, he has been conducting a continuous follow-up survey in some large cities in China. His first survey *Ant tribe* (2009), *yizu* in Chinese, was realised after two years of investigation and around six hundred interviews on the living conditions of young neo-graduates at the Tangjianling village in Beijing. The second investigation was conducted in 2010 in the metropolises of Beijing, Shanghai, Guangzhou, Wuhan, Xian, Chongqing and Nanjing, by more than 5,000 interviews.

Lian Si has described 'low-income gregarious college graduates', whom he calls the 'ant tribe' to refer to the masses of young university students who are living in cramped 'ant nests' (SI, 2010). Beijing is home to around seven of these kinds of colonies: slums into which are packed thousands of young graduates who spend their time in temporary jobs, talent fairs and job interviews. China's 'ant tribe' describes the struggling young migrants, who, 'armed with their diplomas, scramble to big cities in hope of a better life only to find low-paying jobs and disastrous living conditions' (CHAN, 2009).

Most ant tribe members are between 22 to 29 years old, and thus from a post-1980s generation. According to Lian Si's research, around 60 percent of them graduated from the second-tier universities and colleges of China, and

[62] With 'overeducation' I refer to the employment of a skilled workforce in sectors and jobs that require competences and skills inferior to those possessed by the employed. The earnings of those workers in occupations that require less schooling than they actually have (i.e. they are overeducated) are less than the earnings of workers with the same level of education as themselves. With pauperisation I refer to the progressive impoverishment of the workforce.

most of them are children of peasants or *mingong*, who spent almost all the family savings to pay for their education[63] (SI, 2011). Often the first of their families to even finish high school, they are part of an unprecedented wave of young people all around China who were supposed to move the country's labour-dependent economy toward a white-collar future. Most of the 'ants' had degrees in popular majors such as medicine, engineering, economics and management, and '7.2 percent of them have at least a master's degree compared to 1.6 percent in 2009' (SI, 2011).

The ant tribe have in common not only being graduates from little known universities and colleges without prestige; moreover, despite their education, their work experience is made up of unstable and underpaid jobs, overqualification, and jobs that often do not match their skills or what they studied.[64] Their average wage is no higher than a migrant worker's: according to a study of the Chinese Academy of Social Sciences the monthly

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[63] The word *mingong* is the union of nonming (peasant) and gong (temporary worker); it points to the status of a productive figure that is realised by negation: no longer a peasant and not yet *gongren*, that is a worker.

[64] What emerged out of the research by Lian Si was confirmed by a survey of the MyCOS Institute (chinadaily.com.cn/china/2011-06/09/content_12666482.htm, last access July 12, 2011), based on about 227,000 college graduate interviews six months after they graduated last year. This research reported that some 36 percent of these graduates regarded their positions as 'inconsistent' with their career plan, while 22 percent of them said the work failed to match their interests. The same survey reported that 'jobs not matching career plans' was a salient reason why 34 percent of these graduates left their positions within six months of graduation.

The aptitude of this new generation of a skilled workforce facing temporary and flexible jobs, is disaffection and lack of loyalty. This has emerged out of the research of Chang into the so-called *kuangli*, which means literally 'crazy leaving'. According to Leslie T. Chang the *kuangli* is a practice increasingly common among young workers that leave their job without notice or explanation, in order to go to a new factory with a better job, or simply to move to new city (Chang, 2009). Close to these findings is the research of Andrew Ross on the Chinese white collar workers who 'have little sense of loyalty and any reason to trust an employer' (Ross, 2006).

wage rates for these fresh college graduates are not significantly higher than those of migrant workers without a degree.[65] Moreover many of these young neo-graduates, cannot find a job and are unemployed:

> In today's labor market, the unemployment issue among the young generation is dominated by structural unemployment […] This problem first appeared in 2003 with the graduation of the 1999 cohort. As many as 750,000 college graduates could not find a job upon graduation; the number soared to 1.2 million in 2005, and nearly 2 million in 2009, or 32 percent of the 6.1 million graduates. The real numbers could even be higher than the official figures: this is because to reach the benchmark employment rate of 70 percent upon graduation required by the Ministry of Education, some universities report some unemployed graduates as employed. (LITAO, YANJIE, 2010)

From this picture of China's 'high-tech underclass' (LEONG, 2010) it emerged that the qualification in itself, if not provided by prestigious universities well positioned in national and international rankings, has no positive influence on working conditions and wage: 'a major fault line in social stratification is shifting from between secondary and higher education to within higher education, i.e., between the reputable universities and less reputable ones' (ZHAO, YANJIE, 2010).

> These college graduates – who were once regarded as the pride of the family – […] find out that the four years they spent toiling away in the ivory tower doesn't automatically mean a bright future or even a decent life […]. (SI, 2010)

[65] Social Blue Book 2010, Sociological Institute of the Chinese Academy of Social Sciences, December 2009 (Mercer, 2010).

There are several variables intertwined within this framework: the relationship between education and social mobility is linked to the internal migration from the countryside and rural areas to the cities; for this reason understanding social mobility in China is a very complex issue. When education is unable to have any positive influence on professional career and wages, and when the social mobility related to education is not guaranteed, the young graduate remains in the city instead of returning to the countryside:

> in the big cities there are coffee bars for social gatherings, cinemas for entertainment, and most importantly, other people of their age who share similar life experiences. Second, the decision to live in a city reflects the desire of young Chinese to integrate themselves into mainstream culture, to keep up with the times, which is something you can only do in the big cities. (SI, 2010)

The border and the difference between city and countryside is a pivotal element within the analysis of upward mobility in China, especially for the neo-graduates from schools with neither prestige nor good reputation. Metropolitan life marks a difference in social status: in China, within its process of modernisation, metropolitan life is held in higher esteem, and this is perhaps what explains why young people stay in the city despite it being so difficult to find a job there.[66]

[66] Observing the labour market of the metropolitan areas of medium and large cities like Beijing, Shanghai or Guangzhou, according to L. Brandt it is possible to observe that over the past six years the rate employment has actually grown is by about 4 percent per annum and the demand for the migrant workforce has clearly exceeded that of urban residents (5.1

Looking at the ant tribe, it seems that the inability of higher education to ensure upward social mobility in terms of salary and occupation is replaced by the metropolitan life, its appeal and lifestyle. In fact it seems that 'where you live', for this generation of skilled workforce, is something perhaps even more important that 'what you earn' or 'what you do'.

Rather than returning to the countryside, they live in a precarious condition in big cities looking for job opportunities in the service sector; this is the case of Tangjialing: one of the ant tribe colonies close to the technology park Zpark, the so-called *Silicon Valley of Beijing*.[67] The border to be overcome is between the countryside and city, so they leave the countryside and don't want to come back:

> Compared to smaller cities where connections are a very important factor in a person's ability to climb up the social ladder, they prefer to live as ants in the city, chasing the "China Dream," rather than being a big man in a small city. (SI, 2010)

China is facing a social composition of internal migration that is very different from the past, and that is characterised by the central figure of the graduate from the second-tier university and college. These young graduates, who attended colleges using their family savings, have no intention of returning to the country. For them the move from countryside to city is a

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percent versus 3.3 percent). However, the unemployment rate of university graduates in the same city is almost doubled, rising from 6.3 percent in 2000 to 11.9 percent in 2005 compared to the national average of 4.9 percent (Brandt, 2010).

[67] This technology park hosts companies like Siemens, Baidu, IBM and Lenovo among others. In the north of Zhongguancun most of the employees in its offices are graduate and post-graduate students working part time.

one-way mobility, and it passes through higher education, although getting degree does not avoid precariousness or low-skilled and underpaid jobs.

They live in the metropolis to gain 'access to potential learning opportunities' (BOROVOY, 2010), to experience new lifestyles that the countryside can't offer them.

If these young 'metropolitan people' don't want to go back to countryside, however, this is exactly what new government policies are trying to do. In fact, since 2009 the Government has introduced new public policy on work that consists of sending thousands of new graduates to rural and remote places of the country (SEGURA, 2009).

This original and new phenomenon of a 'sent-down generation' recalls the last century and the Cultural Revolution when, under Mao Zedong, thousands, if not millions, of young graduates were forced to leave urban areas and move to the countryside (hence the term 'sent-down'). 'The countryside is a vast expanse of heaven and earth where we can flourish', proclaimed Mao in 1955, forcing neo-graduates to participate in agricultural work and to cultivate the land. If once this policy served to banish people too critical of the Party, prescribing them the bite of rural misery, today's graduates have become *guancun*, a sort of local assistant to the village officers dealing with the problems of those who live in a small village in the countryside. With a monthly salary of no more than 3,000 Yuan, after three years of service in these remote areas of the country, the reward is the right to return and to stay as a permanent resident in the city where one spent years studying at the university.

From punishment to a system of neo-graduate employment, from political exile to employment strategy: the new sent-down generation describes the case when hope fails, and it becomes a simple illusion. Working in

geographical areas considered poor and not adequate for the lifestyle that one is looking for, spending time on menial jobs that do not match one's skills are aspects of what could be called the 'logistic of downgrading/deskilling' workforce.

In the second-tier university and institutions the increasing expenditure on education is not positively related to a direct return in either economic or social terms: the fact that only the top university degree is a guarantee of upward mobility while most of the skilled workforce is experiencing a progressive pauperisation, seems to be the most vivid characteristic of the current expansion of higher education.

A strange overlap: interns and the rise of the Xuegong

Facing the low employability of the majority of graduates from second tier universities, in addition to the original 'sent-down generation', the answer of the Chinese Government has been the introduction of the Vocational Education and Training programs (VET) in 2009, some of these dedicated to the 'ant tribe'.

The vocational education and training scheme (VET) refers to technical education and skills training provided by pre-employment programs, job transfer, apprentice and internship programmes, on-the-job training and various certificate courses. To promote a better chance of finding a job and a stable income, the Government decided to improve this kind of education, and some courses were dedicated to neo-graduates from second tier universities (HAO, 2010). The implementation of these policies has redefined

the relationship between education and the labour market through the expansion of internships and numbers of interns in recent years.

In fact, for the last few years in China it has been possible to observe a sort of overlapping between education and the labour market characterised by the increasing use of internships for young students and unemployed graduates. Despite internships being an educational activity that takes place in the workplace and which aims to increase the employability of the skilled workforce, it seems that hiring interns is becoming simply a strategy to allow employers to pay workers below the legal minimum wage.[68] The impression is that the internship is transforming education into a device to provide cheap labour. Interns are in a grey space between the labour market and education that is not regulated by the Minister of Education nor by the Minister of Labour: these programmes are not governed by labour contract law but are under a complex set of local and national regulations that are fragmented and quite general. The policies of VET, in the absence of fixed rules, as a matter of fact transform students into a new figure of exploitation without any guarantee of future employment.

Recent research on the automobile industries in China are highlighting 'a technique widely used by foreign companies to keep wages down: hiring large numbers of "trainee" workers who can be paid less than the legal

[68] In July 2010, around 60 academics and dozens of students from China, Taiwan and Hong Kong made a two-month-long investigation that was conducted at 12 Foxconn facilities and included nearly 1,800 Foxconn employees' interviews and surveys. The report highlights that 'over-reliance on and misuse of interns, students and recent graduates who fill the same jobs as entry-level staffers. The company saves money by hiring workers as interns rather than full employees, using third-party employment agencies and avoiding insurance and other benefits required under Chinese labour law'. Moreover the study reported that 'thousands of interns - who are supposed to be limited to eight hours' work per day - are expected to work long hours of overtime (McLaughlin, 2010).

minimum wage'. This is the case with the Honda plant at Foshan: About a third of the plant's 1,900 workers are interns, who as vocational students typically receive lower wages and fewer benefits than regular employees:

> The trainee system is a deliberate way to allow factories to pay workers below minimum wages. In some cases, trainees at the Honda gearbox factory are paid 20 percent below the minimum wage set by the city of Foshan for qualified workers, which is 920 Yuan, or approximately $135, a month. (SHIROUZU, 2010)

Under the VET the institutions of higher education are changing and provide a workforce to answer the needs of local production, entering into relation with new agencies both local and national, public and private, working with public and private stakeholders creating a new mode of governance of the workforce.

Facing a shortage of generic manpower caused by the 2008 anti-crisis plan of the Government that employed thousands of workers to build infrastructure,[69] since 2009 the government has been trying to resolve this situation by a sort of 'cognitivisation of exploitation' so it is able to offer a basin of an abundant and disposable workforce.[70] The VET is part of this strategy.

China and the multinationals located there have discovered interns: an 'inside' industrial reserve army composed of young people who have learned discipline at college and are now entering the factory. The possibility

[69] In November 2008, the Chinese Government decided to allocate a financial package of 4 trillion RMB (USD 586 billion) to stimulate the national economy in the period 2008-2010.

[70] This is confirmed by a recent comment of the Minister of Education who affirmed that 'the government is encouraging students to undertake internship training in the factories to answer the lack of workforce in the manufactory sector' (Hao, 2010).

of having a large pool of interns has become the appeal by which some Chinese regions, the most economically poor but rich in terms of population, are trying to attract multinationals and their plants. The institutions of education mould themselves into becoming 'employment agencies' through inter-regional cooperation agreements.[71] As students are spending more and more time at the factory for their curricula, they are working full time despite being paid as interns.

The Chinese labour market is a multifaceted dispositive that, in order to obtain a low-cost workforce, not only insists on migration processes already in place, but is moving into new ground. The *mingong* (not farmer, not worker) that has lead the growth of the last thirty years is giving way to the *xuegong*, an original mix of the *xuesheng* (student), and *gongren* (worker). It is possible to observe the production of a new identity by capitalist command: a multiplication of identities that is affirming itself as a negation of social guarantees and rights (NGAI, 2007).

In the Chinese labour market there is a continuous outside: it is the 'outside' of an 'inside' where the absence of legal protection makes possible original

[71] Today the institute of higher education is deeply renewing the link between regions and multinationals through the governance of the workforce: the same link that founded the neo-liberal reforms of Deng Xiaoping is now being displaced in education. The relationship between foreign companies and vocational schools is becoming stronger by those schools funded by multinationals that hope to obtain, in this way, a regular inflow of a cheap workforce for their assembly line. 'The links between foreign companies and local schools run deep in China. In some cases, the schools are partially funded by foreign multinationals, which provide expensive equipment, course material and even trainers to ensure that the schools churn out graduates with specific skills who are able to slot easily into production lines. The schools often become integrated into factory operations as, in effect, an apprenticeship program. Some students spend their final year on the factory floor, doing a full-time job but being paid as an intern' (Shirouzu, 2010).

forms of exploitation, characterised by low wages, that are being carried out through education.

2.5 CHINA'S LABOUR MARKET AS DUAL MARKET

The progressive expansion and differentiation of higher education, the hierarchy that opposes prestigious universities with good reputations against the second-tier universities that occupy the lowest tier of ranking are reflected in the labour market, which is describing a progressive economic dual segmentation. It is possible to describe it as a social stratification that has the characteristic of being a 'bifurcation', well represented by the syncretism between status-oriented and client-oriented university, key university and second-tier college (see Chapter 1).

The word dualism, which I use in this chapter, was developed in sociology and economics in the late 1960s in America (PIORE, 1979a; 1979b; PIORE, BERGER, 1980; PIORE, SABEL, 1984). The 'dual labor market' theory has been empirical and descriptive in nature, and 'has been directed primarily towards the specific policy problem of poverty and underemployment' (KALLEBERG, SORENSEN, 1979).

If studies on social segmentation 'historically placed great emphasis on race and sex as factors generating labour market segmentation' (REICH, GORDON, EDWARDS, 1973), my attempt is to use this analytical and theoretical analysis to study the effects of education and its differential effect on the skilled workforce. In particular I am using the term dualism from the studies on segmentation of the labour market by MICHAEL PIORE and SUZANNE BERGER (1980).

According to these authors the 'minimalist notion' of dualism in the labour market hypothesis recognises a distinction between two sectors:

> a primary sector, containing the more attractive and better paying job opportunities, and a secondary sector, whose jobs are generally regarded as inferior and less attractive. The disadvantaged and underprivileged groups – originally black workers, but in later versions ethnic and racial minorities, women and youth – are confined to the secondary sector. (PIORE, BERGER, 1980)

There are two characteristics of this model that I would like to use from Piore. First of all, using the word dualism they stress the autonomy of each sector and the radical discontinuities of the social organisation:

> The significance of dualism is not that a society is divided in two autonomous and discontinuous segments, but that a society is divided segmentally and not continuously. (PIORE, BERGER, 1980)

The forms of social differentiation that emerge, recalling some aspects of the Marxist apparatus, are radically distinct from each other and in conflict rather than related by a progressive integration into a seamless social system. The second key feature is the lack of mobility between the two sectors or segments that provide such different employment opportunities. The dual labour market theory states that 'there is an inability of secondary workers to obtain jobs in the primary labor market over the life course' (DOERINGER, PIORE, 1971).

Analysing the market of education I have repeatedly emphasised that the expansion of higher education is characterised by a hierarchy that divides

top and second-tier institutions, and in particular this distinction is pronounced by ranking. Thus the result is a system that brings out and multiplies, rather than mitigates, the differences between institutions that release a degree. Rather than a progressive integration of the differences in the educational system, this process involves an increasing polarisation between students from top universities, considered providers of education of quality, and second tier universities.

Therefore, considering these observed elements together with what I have analysed in the Chinese labour market, it is possible to describe this latter in turn as a stratified market. Composing its strata in terms of a uni-dimensional index of jobs related to earnings, there emerges a labour market that is divided in two main sectors.

The primary sector of the labour market is characterised by an effective, both economic and social, return to education, and this payoff is guaranteed by the high positional level of the university in the hierarchy. It is about the most prestigious universities, the key university or top university with a good reputation.

In the secondary sector there are students and neo-graduates from the second-tier university, and in this case there is no return to education, neither economic nor social, that is assured for those who have studied. As the analysis on the ant tribe has shown, neo-graduates from the second-tier universities are experiencing increasing unemployment, overqualification, and casualisation. In addition this secondary sector is divided into an upper and lower tier. The upper tier consists of students from college and university, while students with diplomas from vocational schools compose the lower tier.

The members of the first tier of the secondary sector are increasingly moved away from the first sector, and they are pushed toward the second tier of their sector. It is possible to deduce this trend from the finding of Hai Zhong's analysis (ZHONG, 2011) that I described in paragraph 2.3 of this Chapter: in fact this author has shown us how the difference in wages between undergraduates of second-tier universities and vocational schools is narrowing. Moreover, this process is accentuated by the vocational education and training programs (VET) which, by extending to the neo-graduates of the low-tier and college the educational policies of the vocational school, redefine the relationship between skills and the labour market.

This suggests a segmentation of the labour market characterised by little or no mobility between the two sectors and a growing polarisation between them, caused by the tendential moving of the first tier toward the second tier of the same secondary sector.[72]

If Piore has insisted that mobility between these two segments of the market is severely restricted, this hypothesis is not only assumed by the description that I am showing, rather, in this model of segmentation this characteristic is further accentuated by the progressive bifurcation between the first and second sector.

In a certain sense, this segmentation and polarisation of the labour market reflects a *differential distribution* of *social risk*. The duality of the labour market allows us to point out two different logics of 'risk management' in the labour market. In fact the university ranking that divides and segments the top and second-tier university, refers not only to the quality of education and degree,

[72] An interesting study on the inter-sectors and intra-sectors of labour market overlapping is that of Michael Sattinger (2006), which has inspired my analysis in this section.

but is linked to different kinds of risk management which can be institutional, that is collective, or individual.

While in the primary sector of the labour market, the risks associated with the labour market (i.e. losing one's job or being unemployed, the risk of being underpaid, small or a total lack of guarantees for the future and one's career) is entirely managed by the prestigious university institutions, in the secondary sector associated with the second-tier university, the risk is entirely levied onto the individual.

2.6 ANALYSIS OF CHINESE STUDENT STRUGGLES

In the framework of the dual labour market that I have outlined, in this final section I will analyse two recent struggles that happened in China that show the frictions characteristic of this stratified social configuration. The first struggle erupted in 2006 in a private Chinese college; the second example that I take into consideration is the strike based on wage increase demands that blew up in 2010 in the automotive industry in the South of China (in the Guangdong region).

a. Squat the ranking! The student struggles of the Q-factory

An new kind of student struggle erupted out of this scenario where ranking, brand, prestige and a university's reputation are a guarantee for upward mobility. Within the struggle, it is possible to observe the appearance of a new social figure, what one might call the *student-consumer*, and an example of this occurred at Shengda College, where many of its students protested by squatting a lecture hall and forced the dean of the school to resign.

I have already explained the particularity of this college that has exploited the well-known Zhengzhou University name as a brand in order to promote its own activity (Chapter 1). In 2006 a violent protest erupted as soon as students realised that Shengda College was being forced by central government to sign its certificate degree using its 'anonymous' name in place of the respectable Zhengzhou University brand, that is of 'mother school' (KAHN, 2006a). In fact the name of this university is much better known in China, where it enjoys greater reputation and prestige than the little known name of Shengda College. This sparked the students' anger, because of 'the college's move to award less prestigious diplomas' (KAHN, 2006b).

In a discussion during the protest a student wrote on a Chinese online education blog (which was immediately closed): 'We are bloody angry! They have told us that their diplomas just got less prestige!!' 'We've been cheated out of three years!'; while another student wrote: 'In the countries who have so-called "elite universities", quite a lot of students and employers are totally obsessed with them - what counts to them is solely the prestige of the universities they've been at and not the actual skills'.[73] 'We bought a Mercedes-Benz and they delivered a Santana' complained another student while occupying the dean's office (KAHN, 2006a).

The turmoil of Shengda College was not an isolated case in China during 2006 to 2008: it was followed by similar events and protests, for instance at the East Soft Information campus of Dalian, where students burned down campus facilities and clashed with police as soon as they discovered that the high fees they had paid did not guarantee a well-recognised degree, that had

[73] www.3ec.cn

become a 'junk degree' overnight. In fact a few days before, the college was forced to sign its certificates of study with its own name instead of the name of the university in the region much better known and popular.

I have reported these events because they question the contemporary value of degrees and knowledge, allowing us to explore a little bit more the relation between qualifications and the labour market, between inclusion and social exclusion, introducing the concept of *inequality* through the idea of inclusion. These protests confirmed that the university's name, label and prestige are what matter for education and the labour market. In our case, the Zhengzhou name was influential enough to raise fees and be used to compete, a brand that could be an effective signal for upgrading mobility.

These student protests are dealing with the architecture of a new social stratification: in the most populous country of the world, the new expansion of higher education is not directly related to a bottom-up mobility, because a simple degree seems to not be sufficient to access high wages for most of the skilled workforce. From this point of view it seems that education is assuming more and more the characteristic of what I have called a positional good (HIRSH, 1977): the value of the degree and the return to education depends on the ranking and on its position within the national and international hierarchy. This hierarchy sets up filters where a degree from X university or Y country is worth less that the same degree from another university or country, and this is displayed in wage differentiation.

Not only is the 'relative' value of a qualification affirmed over its 'absolute' value (the value of knowledge is less and less independent and more and more measured in terms of position relative to another): this is the field of new conflicts, new attempts at reclamation and other social struggles.

b. The edu-factory *or the displacement of the student struggle*

Strikes that erupted in the automotive industry of Guangdong in 2010, involved in large part the Honda factories which are characterised by a new social composition of workers: most of the strikers who clashed with official unions and blocked the entire production of Guangdong were interns[74].

When education and the labour market mutually redefine each other, and the figure of the intern is gaining more and more presence in China's factories, is it possible to read these struggles as student struggles? In fact, the Middle Kingdom seems to be facing an original displacement of education protests to *inside* the factories.

The strikers knew each other before joining the assembly line, because they were classmates at the same college: the common background facilitated the organisation of struggle, and the pre-existing social relation has become a powerful means of political organisation. Not only are the dormitories of the factories important places for organising workers in China (NGAI, 2007): the Honda strikes show us that schools are taking the same importance (KAIMING LIU, interview). The protest erupted out of claims for a higher salary by workers and, when the Honda management refused any mediation, they decided to block production, spreading the protest throughout the entire industrial cycle of production.

The concept of *Verelendung* has found an analytical and theoretical depth thanks to Karl Marx, who provides at least seven definitions of this

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this statement has been confirmed to me by several people that followed the protests, including Lang Yan of the China Study Group. For more information about these struggles: Lang Yan (2010); China Labor News Translations CLNT (2010); Open Letter to the Public and All the Workers in Honda Auto Parts Manufacturing Co. by Representatives of the Striking Workers (2010).

phenomenon (GALLINO, 2006). First of all *Verelendung* means 'general law': it describes the progressive impoverishment of the workforce as a direct effect of a decrease in real wages (in this framework it could be possible to understand poverty as an effect of the capitalist deconstruction of the working class).

If so, the problem is to understand if progressive impoverishment is a dispositive of subordination or instead the driver for a new political class composition. With this kind of question Marx, in addition to the 'general law' of pauperisation, has theorised the *Verelendung* as 'tendential law': the same condition of progressive impoverishment can be attacked and reversed by the political action of the workforce. This is a fascinating theory that I would like to use as a compass in the investigation of China's worker strikers. The cycle of the Honda protest shows that the composition of an educated and mobile workforce is changing the behaviour of the classical *mingong*: blocking the assembly line, occupying roads and bridges, demanding higher wages, are practices that reveal a disposition to engage new radical struggle and resistances.

In the 'factory of the world' students are connected to the classical figure of a migrant worker changing their attitudes and behaviours, and these strikers are a clear example of it: claims for up to 80 percent increase in salary, efficient organisation, the ability to power bargain (really different from the chaotic protests of the recent past) and the request for independent trade unions are just some aspects of these original struggles (GEOFFREY CROTHALL, interview). They erupted with unique intensity in many manufacturing sectors, and in less than one year obtained an average increase of wages by about 20 percent as well as the rising of the legal minimum wage of several regions, which had been blocked for over two years (BRADSHER, 2010).

In the summer of 2010, the entire satellite car industries of Guangdong were completely blocked by wildcat strike and pickets asking for more rights and money. Despite there being no specific form of solidarity between different strikes, the interns' protests started a 'wave' involving both private and public industries, linking together struggles of different sectors (DO, 2010).[75] Workers, interns and migrants have tried to strike together with the same slogans and improve their collective power.

A new generation of migrants, described by some media as the new 'pioneers' of the strike, has lead the negotiation for increasing wages (GEOFFREY CROTHALL, interview).

Moreover the *xuegong* in Guangdong has found new allies: undergraduates of the prestigious universities in Beijing who have grow up in the countryside together with those who have blocked the assembly line (KAIMING LIU, interview). Several students of the key universities have set up collectives composed of teachers and students seeking to support and provide assistance to the strikers. The countryside, to which is outsourced the cost of the reproduction of the migrant labourer, becomes a valuable element of struggle: the limits of discrimination and exploitation were turned into a device of political organisation by the 'practical knowledge' to strike.

'To get rich is glorious!': this is one of the most famous of Deng Xiaoping's slogans that was addressed to struggles that broke out during his reforms of State industry which closed down many factories because of their lack of market competitiveness. During the strike, this sentence was on the lips of strikers, and this *motto* became the slogan for the young interns in their

[75] The workers of the fast food chain KFC obtained a wage increase that started from October 2010.

struggle for higher wages and rights. China is not only the world's factory, but is becoming the epicentre of wage struggles, and maybe these events will change the relation between higher education, skills and labour globally. In the Middle Kingdom all quantitative changes are at the same time qualitative, and the changing power relation between capital and labour might result in a new system of political struggles at a global level.

CHAPTER THREE

THE INTRA-ASIA MOBILITY AND THE REGIONAL HUB OF EDUCATION AS A DISPOSITIVE OF POSTCOLONIAL DIFFERENTIATION

3.1 THE GROWING INTERNATIONAL DIMENSION OF HIGHER EDUCATION

In this chapter I will study the internalization of Higher Education, the global geography of knowledge production and the emergence of a new dispositive: the Regional Hub of Education (RHE), a relatively new 'geopolitical dispositive' of student mobility focused on migration policies and commercial strategies to lure international students, thus deeply changing the internationalisation of higher education in Asia as well as at the global level.

My hypothesis is that the ability of the RHE in attracting international students like a magnet is derived by the education of academic workforce and by the English language utilised as medium of instruction (MOI) in the universities. English is the main language spoken by the RHE, with which the universities courses are provided for international students.

The RHE will be studied taking the case of Hong Kong and its policies, focusing on its student population as well as on the academic workforce employed in the universities of this city-state. The assumption is that the RHE is a crossroads, a contact zone where a heterogeneous and international composition of students are attending universities that are characterised by a highly international composition of the academic workforce (I refer to

employees of universities, both full-time and part-time, covering duties of teaching or research, or that have positions in the university administration such as provost, dean, head of school etc.).

Then, I will use the language as a medium of instruction to investigate the various aspects intertwined in the establishment and functioning of the RHE: considering this latter from the point of view of language, there results a really complex dispositive. Studying the English language utilised as medium of instruction (MOI) in Hong Kong, it will show us that higher education and its internationalization nowadays is an important dispositive to segment population within globalization, having the same force (or even more) as those of gender and race.

It is doubtless that an important element characterising the transformation of higher education today, particularly in Asia, is its growing international dimension (LUKE, 2005; ALTBACK, 2004). If in Chapter 1 I demonstrated that expansion and differentiation are positively correlated, it could be affirmed that the internationalization is a sort of 'multiplier effect' on both these processes within higher education.

The internationalisation of higher education is defined by Jon Knight as 'the process of integrating an international/intercultural dimension into the teaching, research and service functions of the institution' (KNIGHT, 2004). In contemporary empirical surveys the internationalisation of higher education is often described through the mobility of students (TEICHLER, 2007), the analysis of the academic workforce, programs and curricula (OLDS, 2010) as well as through institutional mobility, that is the mobility of universities themselves (ROSS, 2009; MCBURNIE, ZIGURAS, 2007; OLDS, 2010). This latter aspect is quite a new emerging phenomena: according to Kris Olds,

worldwide there were 24 foreign branch campuses in 2002, 82 in 2006 and 162 branch campuses in 2009 (OLDS, 2010). The map below (*Figure 10*) shows the distribution of this phenomenon globally in 2009.

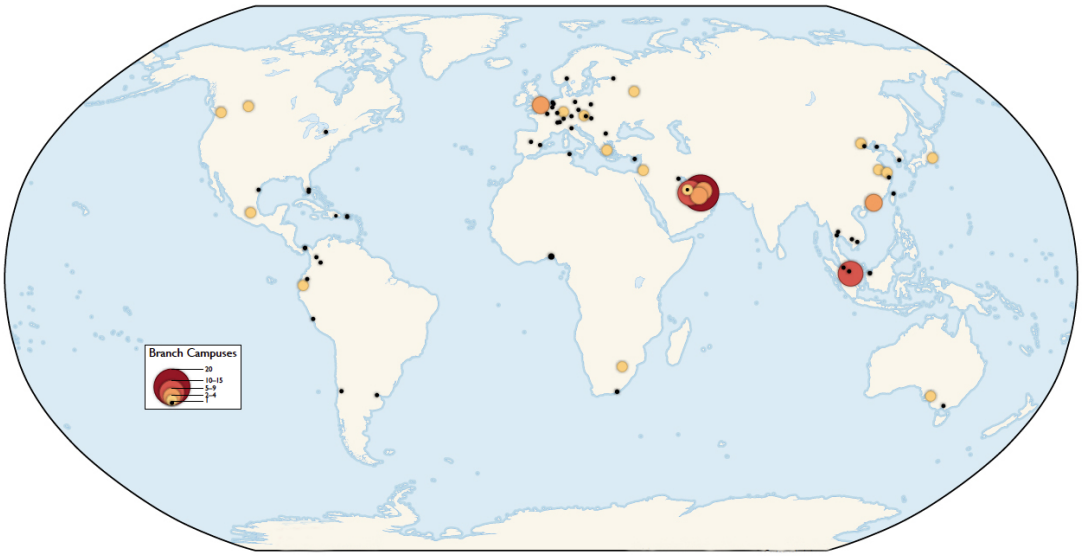

Figure 10: the distribution of the branch campuses at the global level.
Source: OBHE's 2009 report International Branch Campuses: Markets and Strategies, in OLDS, 2010.

In this overview of studies on the internationalisation of higher education we should mention a group of scholars, which have focused on the mobility of students, academic workers and institutions through the lens of post-colonialism, decolonisation and the nexus of knowledge/power (WEE, 2007; LAW WING SANG, 2009; CHEN, 2010).

This literature has described the internationalisation process and the mobility of skilled workforce based on partialities, asymmetries and historical sedimentations, while the global production of knowledge is characterised by different centres and peripheries never the same once and for all. One vein of these studies focuses on the language medium of

instruction, in particular so-called World English (WE), which represents one of the most important factors related to the internationalisation of higher education as well as to the post-colonial geography of knowledge.

The most significant contributions in this field are perhaps those of ALASTAIR PENNYCOOK (2000), ANGEL M. Y. LIN and EVELYN Y. F. MAN (2009), ANGEL M.Y. LIN (1997; 2000; 2006a; 2006b) and PETER W. MARTIN (2005). Studying language in education (LIE), the medium of instruction (MOI), the English second language (ESL) and language policy and planning (LPP), these scholars have developed analyses of colonial and public discourses (LIN, 1997; PENNYCOOK, 1998; 2002), studies of mechanisms of social stratification (LIN, 1997) and critical ethnographies (LIN, MAN, 2009; POON, 2000a; 2000b). They have highlighted that today what matters in the global labour market is not general knowledge but a kind of knowledge associated with the English language at the detriment of other kinds of education:

> while the cosmopolitan multilingual elite well-versed in global English and new knowledge technologies (often mediated through global English) can find jobs anywhere across the globe (i.e. gaining transnational mobility), those monolingual locals who never catch on to the new skills and new languages (often due to lack of class-based capital and habitus) are ever more locked up in non-mobility both geographically and socioeconomically. (MARTIN, 2005)[76]

[76] This opposition, originally from the work of Zygmunt Bauman (1998) *Globalization: The Human Consequences*, is reported by Angel M.Y. Lin and Peter W. Martin in the book *Decolonisation, Globalisation Language-in-Education Policy and Practice* (2007).

In contemporary education, according to Angel Lin:

> English has been discursively constructed as the indispensable, natural, neutral and technical vehicle and medium mainly, if not merely, for accessing advanced science and technology, world civilization and both personal and global socioeconomic success. (LIN, 2007)

It seems that the English language or the so-called 'linguistic capital' (WEE, 2004) related to MOI is an influential factor in positively linking together education and increasing labour productivity, while the mastery of English and international culture seems to be a factor positively associated with earnings.

This finding is verified by the researcher Fengliang Li, W. John Morgan, and Xiaohao Ding analysed in Chapter 2: according to these authors holding the 'standard English certificate does not only significantly improve probability of being a successful job seeker, but it also helps graduates to find a job with a significantly higher salary' (LI, MORGAN, DING, 2008). It emerges that in the Chinese labour market 'a good proficiency of English can be an efficient proxy of higher capacity or it may mean that, with globalization, potential employers prefer graduates with a proven ability in English' (LI, MORGAN, DING, 2008).

The English language is associated with the ability to compete at the global level, with ICT services and the high value-added knowledge economy (WEE, 2004). Jim Cummins affirmed that considering English language as a means to advance socially and economically is a feature of most of the countries in South East Asia:

> English has often been perceived as an *indispensable resource* which many postcolonial peoples and governments seek for themselves and their younger generations in their respective socioeconomic contexts. This is often infused with a strong desire for economic development, technological and material modernisation, and human-resource capital investment for current and future successful participation in the new global economic order. (CUMMINS, 2009)

Other scholars have studied the growing international dimension of higher education through the continuous changes that have overcome both institutional and geographical 'external' and 'internal' boundaries [77]. According to Sarah Guri-Rosenblita, Helena Sebkova and Ulrich Teichlerc the 'external boundaries':

> define basically which kind of institutions are recognized and thus included in or excluded from the higher education system. [...] The external boundaries do change from time to time if, for instance, non-academic institutions are upgraded to an academic status, or a new HE law changes the status of tertiary level institutions or research institutes. (GURI-ROSENBLITA, SEBKOVA, TEICHLERC, 2007)

The 'internal boundaries':

> reflect the horizontal and vertical structures of any given higher education system in relation to a variety of variables: overall structure (unified, binary or segmented into several sectors), the interrelations between the public and

[77] These authors have described institutions and national educational systems that are more or less differentiated in relation to these elements. The 'diversified model' is characterised by a high degree of both internal and external differentiation, whereas, in the 'integrated model' the differentiation is not highly vivid.

> private sectors, access policies, study programmers, budgeting patterns, research and teaching policies, academic traditions and cultures, evaluation and accreditation etc. (GURI-ROSENBLITA, SEBKOVA, TEICHLERC, 2007)

Studying the internationalisation of HE through the concept of borders, that is to say how they are crossed and transformed, is useful to show the increasing heterogeneity of educational system and new processes of stratification and internal differentiation in place at the global level.

It is possible to observe two distinct kinds of internationalisation process, which correspond to different kinds of mobility: *short-term* and *long-term* student mobility (KNIGHT, 2004).

Short-term student mobility is quite recent, and is characterised by being highly flexible: it is an intra-university mobility involving several institutions of several countries at the same time (TEICHLER, 2007).

According to ARNOUD DE MEYER, PATRICK HARKER and GABRIEL HAWAWINI (2004), this kind of internationalisation of higher education could be named 'network model'[78]; the 'joint degree program' and the 'dual or double degree program' are perhaps its most distinctive elements: students, in order to obtain a degree, study at two or more universities in as many different

[78] Concerning this issue of great interest is the project 'global university: dual/joint degree working group': it is a working group that was founded by the dean of the Division of International Studies, Gilles Bousquet of UW-Madison, examining the issue of joint and/or dual degrees between different universities (globaluniversity.wordpress.com/about). Also important is the report *Joint and double degree programs in the transatlantic context: a survey report* prepared by Matthias Kuder and Daniel Obst. It is a quantitative and qualitative survey of the landscape of transatlantic degree programs. (www.iienetwork.org/file_depot/0-10000000/0-10000/1710/folder/80205/TDP+Report_2009_Final21.pdf last access May 12, 2011).

countries.[79] This kind of internationalisation is modifying deeply the classical architecture of university, progressively characterised by inter-institutional networks, links and consortia unfolded on transnational levels, both regional and global. The two tables below review this phenomena: *Table 6* summarises more than ten modes of international collaboration among educational institutions of higher education, while *Table 7* reports on the most famous transnational university networks and consortia studied by Heike Jöns (OLDS, 2010).

Table 6: modes of international collaboration	
name/typology	description
1. Study Abroad	Students participate in a program operated through University of X in which University of X students enrol at a foreign university for a period of up to one (1) year. Students are awarded credit when the course credit they earned while in the program is transferred back to University of X
2. University of X as Study Abroad Site For Other Universities	Students enrolled at a foreign university attend University of X as participants in a Study Abroad program established by their home university with University of X as the study abroad site for a period of up to one (1) year. Students earn credit when the course credit is transferred back to their home university.
	Reciprocal arrangement in which University of X students study at a partner institution

[79] In the 'joint degree programs' students study at least in two higher education institutions and receive upon completion of the study program a single degree certificate issued and signed by all the participating institutions jointly (Kuder, Obst, 2009). In the 'dual or double degree program' students study at least in two higher education institutions and receive upon completion of the study program a separate degree certificate from each of the participating institutions (Kuder, Obst, 2009).

3. Student Exchange Agreements:	and partner institution students study at University of X for a period of up to one year. University of X students transfer credit earned away back to University of X.
4. Course to Course Credit Transfer, Transfer "Contracts"	Pre arranged recognition of the equivalency of specific courses at one institution to the corresponding course at University of X. For degree seeking undergraduates.
5. Articulation Agreement or Program	Allows undergraduate students who have completed a specified curriculum at partner institution to apply to University of X and enrol with advanced standing into a specific program even though the curricula at the partner institution would not transfer directly to meet preparatory requirements at University of X. Usually for undergraduate programs.
6. Third-Party Contract for Course Delivery Arrangements	University of X contracts with a third-party for delivery of courses. In this case the third party would be an organization that is either not an institution of higher learning, or is one that is outside the home country. Off-Campus Program or Course Location (in-state, out-of-state, international): University of X courses are delivered by University of X faculty and staff who are physically present at a remote site.
7. Distance Education, Distance Delivery of Academic Programs	University of X courses are delivered by University of X faculty and staff via distance technology.
8. Collaborative Course or Program Resource Sharing	University of X has a wide variety of arrangement with other universities in which curricular and educational resources are shared to leverage strengths of partner institutions and create synergy. Because of the variety of formats, these are challenging to classify.
9. Sequential Degrees	Formalized arrangement in which students earn a specified degree at a partner institution and then applies to, enrols in, and completes a second, related program at

	University of X. Courses from the first program may be used to waive requirements in the University of X program. Students will still be required to meet all University of X program and degree requirements.
10. Dual Degrees	Students complete the requirements for two degrees from two institutions, with efficiencies in course taking. Each institution is primarily responsible for its own degree.
11. Joint Degrees	A single degree authorized and conferred by two or more partner institutions; faculty, governance groups, governance boards share authority.
Source: globalhighered.wordpress.com	

Table 7: Transnational university networks and alliance as strategies of internationalisation

Global associations and consortia of universities	**Acronym**	**Year of foundation**	**Number of member institutions**
Association of Commonwealth Universities	ACU	1913	500
Unión de Universidades de América Latina y el Caribe	UDUAL	1949	177
International Association of Universities	IAU	1950	620
Association of Arab Universities	AArU	1964	180
Inter-American Organization for Higher Education	IOHE	1979	400
Asociación Iberoamericana de Educación Superior a Distancia	AIESD	1980	38
Coimbra Group	Coimbra	1985	38
Hispanic Association of Colleges and Universities	HACU	1986	450
Agence universitaire de la Francophonie	AUF	1989	686
Consortium Linking Universities of Science and Technology for Education and Research	CLUSTER	1990	15
International University Cooperation, UNESCO	IUC	1993	49
Association of Pacific Rim Univerisities	APRU	1997	42
Universitas 21	U21	1997	21

The Association of Arab and European Universities	AEUA	1998	67
LAOTSE	LAOTSE	1998	37
Global University Network for Innovation	GUNI	1999	100
IDEA League	IDEA	1999	5
Worldwide Universities Network	WUN	2000	18
Academic Consortium 21	AC21	2002	25
ePortConsortium	ePort	2002	898
League of European Research Universities	LERU	2002	20
Global U8 Consortium	GU8	2003	8
International Alliance of Research Universities	IARU	2006	10
International Forum of Public Universities	IFPU	2007	23
Network of Networks	NNs	2008	27
Source: Heike Jöns and Michael Hoyler AAG Meeting, March 2009, Las Vegas			

'Six majors, five location, one degree': this is a recent advertisement for an international MBA promoted by the business school HEC[80]; the academic institution changes its traditional boundaries appearing less like an *island* and more like a *network*, expanding and diversifying its educational offerings, its partners and collaborations, becoming increasingly dependent on several worldwide academic institutions.

The shape of the classical university is changing into *organised networks* (ROSSITER, 2006) that are diversified and active, differentiated and specific while, at the same time, the educational offering becomes heterogeneous, globally displaced and geographically mobile:

> Organised networks compete with established institutions in terms of branding and identity building, but it is as sites of knowledge production

[80] www.exed.hec.edu (last access on August 11, 2011)

> and concept development that primarily defines the competitive edge of organised networks (LOVINK, ROSSITER, 2005)[81].

University includes not only the physics of its spatial dimension, but the connectivity and interconnection between new different actors and services (OLDS, 2007; 2010). This original educational institution includes also 'temporal' assets: links and networks that are not permanent but transitory, partial and capable of being updated continuously (BOLOGNA, 2010). In this new scenario, instead of the disappearance of boundaries, knowledge production at the global level is experiencing a multiplication of borders, which are increasingly dynamic and flexible: they have become mobile relations whose arrangement at any particular time is shaped by a 'constitutive outside' (LOVINK, ROSSITER, 2005) despite not losing their control over specific and determined places.

Quite at the opposite, the other kind of mobility, that is the long-term student mobility, is characterised by studying in only one university, outside the country of citizenship, from the beginning to the end, that is until he/she receives his/her degree, both at undergraduate or postgraduate level[82]. This kind of mobility is worldwide increasing (see *Figure 12*)

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[81] five.fibreculturejournal.org/fcj-029-dawn-of-the-organised-networks

[82] The most famous category, by which this kind of long-term mobility has been described in the past decades, is 'brain drain', related to technology transfer and the international economy of 'human development' (Ghosh, 2001; Meyer, Brown, 1999; Brown, 2000). The definition of 'brain drain', originally coined to describe the flows of a skilled workforce from Nazi Germany to North America during the Second World War (Cervantes, Guellec, 2002), was after 1950 utilised to describe the movement of students and the skilled workforce from Third World countries to the advanced economies of the so-called First World. As B.N. Ghosh and Rama Ghosh wrote: 'Brain drain represents the outflow of [...] skilled manpower from the low developed countries (LDCs) to developed countries (DCs) en masse, and on a

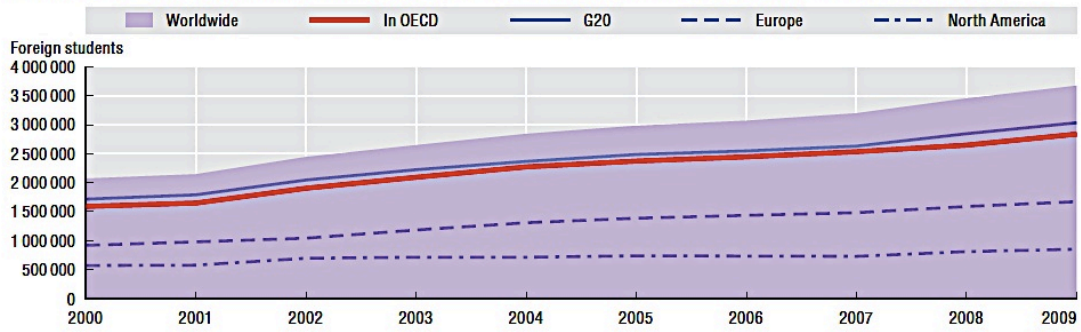

Figure 12: Evolution in the number of students enrolled outside their country of citizenship (2000, 2009). Source: OECD 2011, education at a Glance 2011 Table C3.5

According to ARNOUD DE MEYER, PATRICK HARKER and GABRIEL HAWAWINI (2004) this kind of internationalisation of higher education could be described as the 'exporting model'.

It is possible to focus on this kind of student mobility by trying to frame this rather 'classical' flow as a new, original scenario: the Asian region shows us a new cartography of global knowledge production that refers to new destinations and geopolitical centres of education.

Philip G. Altbach and Hyaeweol Choi, in their studies of international student mobility in Asian countries, have demonstrated that in the recent past flows were primarily directed towards universities in Western countries,

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regular scale' (Ghosh, Ghosh, 2001). From this concept there emerges a deep asymmetry represented by the direction of flows of people from developing to developed countries: 'the problem of brain drain is generated and intensified by the deliberate neo-imperialistic policy of developed capitalist countries which are still exploiting the LDCs under the new cloak of so-called foreign aid and development assistance programmes'(Ghosh, Ghosh, 2001).

particularly the US, UK, Australia, Canada and Europe (ALTBACH, 1994; CHOI, 1995) [83]. A report of the OECD countries marked (2003):

> OECD countries host approximately 85 percent of the world's foreign students, i.e. 2.5 million students; however, in 2007, two-thirds (67 percent) of the foreign students located in the OECD area were from a non- OECD member country. [...] In terms of outgoing mobility, nearly half of the foreign students in the OECD area were from Asia, with 1.2 million students abroad in 2007, twice more than in 1998. (OECD, 2003)

If DAVID ELLERMAN (2006) has described, through classical centre/periphery geography, the direction of these students' long-term mobility (from periphery to centre), DEVESH KAPUR and JOHN MCHALE (2005) have underlined the fact that this flow is still very much from South to North. Philip G. Altbach defines this scenario as 'stratified nature of the global knowledge network' (ALTBACH, 1994), while Andres Solimano argues that

> such flows deepen the existing global inequality of knowledge creation and application: developed countries compete to attract research talent from developing countries, who then consolidate the already strong knowledge base in the former at the cost of the latter. (SOLIMANO, 2002)

These scholars have shown that, for many families in Asia, the best and most valuable education for their children is to study abroad, referring to 'Anglo-European academic centres' (LIN, 2009), whose degrees are supposed to have a *surplus* value compared to 'the rest'.

[83] In the last two years, Chinese have constituted the larger group of international students in these countries, followed by Indian students.

It is possible to observe old asymmetries that persist in the evaluation of the educational system at a global level, which emerge from the families' choices and are embedded in the qualifications among the skilled workforce. In a certain sense it seems that the contemporary educational system is where these 'old' differences persist, if not where they are reinforced.

However other scholars, observing the present long-term student mobility in Asia trough its paths and destinations, have revealed an original geography of knowledge production that is rapidly emerging. As stated by Line Verbilk and Veronica Lasanowski:

> Traditionally, more than 90 percent of international students have enrolled in institutions in countries belonging to the Organization for Economic Co-operation and development (OECD) with the main destinations (the US, the UK, Germany, France and Australia) recruiting over 70 percent of them. Interestingly, however, developments over the past five to six years demonstrate that international student demand might not continue to focus on what have been the main destinations in the past. The US, the UK and Australia have all experienced either a decline in enrolments or a slump in the growth experienced in previous year. Many European countries, which traditionally have maintained significant and stable recruitment numbers for a range of nations with which they a share historical or linguistic connection have stepped up their marketing efforts. Meanwhile, new players in Asia and the Middle East have entered the market with declared ambitions to become regional education centre by attracting as many as several hundred thousand international students to their countries. (VERBILK, LASANOWSKI, 2007)

The British Council affirmed something very similar:

> International student mobility has been traditionally focused towards the Major English Speaking Destination Countries (MESDCs) such as the US, the UK and Australia. Whilst still dominant providers of education for international students, these countries have experienced some declines or moderations in their international enrolments in the latter half of this decade. Additionally, increased student mobility within East Asia also indicates a shift towards a stronger Asian influence in global international education student flows. [...] It seems likely that intra-regional student mobility in East Asia will continue to increase at a rapid rate, foreshadowing a stronger negative impact on international enrolment figures in the traditional MESDCs in the medium-long term future. (BRITISH COUNCIL REPORT 2008)

Today the internationalisation of higher education is constituted by an increase in those students who decide to study in places considered 'second choice'; as Antony Welch and Zhang Zhen write:

> the hierarchical structure in knowledge distribution and dissemination has become less fixed, as the loci of power and growth are multiplying, and becoming more dispersed. (WELCH, ZHEN, 2008)

It seems that something new is emerging: the increasing mobility of students from Asian countries is a symptom of a growing intra-regional mobility characterised by new choices and alternative destinations.

In the next sessions of this Chapter I will interweaving the short and long mobility of the student population within the aspects of the economic valorization of global capitalism in the postcolonial temporality, questioning

the relationship between the specificity of knowledge and its social, historical as well as political context of production.

3.2 THE REGIONAL HUB OF EDUCATION (RHE)

Becoming Regional Hub of Education (RHE) is related to an increasing number of governments, which are reorganizing their higher education sectors as important to their economic development, and it describes the same ambition of different city-states and nations worldwide to take a top position into the hierarchies of the global economy. This relatively new 'geopolitical dispositive' for student mobility is considered a strategic field to become a centre of the new global knowledge production within the 'immaterial' valorisations of capital. The RHE emerges as 'economic dispositive' focusing on the 'export' of 'education services': theoretical and practical reflections on the RHE as well as the public policies devoted to its establishment have flourished in no more than ten years, grounded the liberalisation and deregulation of educational services promoted by the WTO and the edu-GATS agreements (KNIGHT, 2002; 2006; MARGINSON, VAN DER WENDE, 2007; MAZZAROL, HOSIE, 1996; ROSS, 2009; OECD, 2003; 2006; 2010).[84]

[84] Higher education services were added to the GATS jurisdiction in 2000 pressed by USA, Japan, New Zealand and Australia. In Australia education services rank as the third largest export category earner for the year 2007-08, behind coal and iron one. The GATS jurisdiction is composed of four different typologies of services. Andrew Ross describes these as: 1. Corporate spin-offs that do employee training and offer degrees. 2. Private for-profit education providers like the Apollo Group, Kaplan Inc., De Vry and the mammoth Laureate

According to the Cross-Border Education Research Team (C-BERT), the Regional Huf of Education is

> a designated region intended to attract foreign investment, retain local students, build a regional reputation by providing access to high-quality education and training for both international and domestic student, and create a knowledge-based economy. An education hub can include different combinations of domestic/international institutions, branch campuses, and foreign partnerships, within the designated region[85].

KEVIN KINSER and JASON E. LANE (2010) affirmed that the RHE is based on four assumption: 1. institutions in educational hubs exist in close proximity to each other; 2. education hub is primarily a governmental strategy. 3. education hub and education city are inter- changeable concepts: all education cities are designed to be education hubs, but not all education hubs are designed as education cities. 4. education hubs are driven by excess domestic demand for higher education[86].

There are different cases of RHE all around the world (see table A.5 in Appendix): United Arab Emirates, Abu Dhabi, Dubai, Bahrain, Qatar, Republic of Panama are the most important. In Asia examples of this kind of

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Education group (which now owns higher education institutions all over South America and Europe, operates in over 20 countries, and teaches a quarter of a million students). 3. Virtual universities. 4. Traditional universities that offer distance learning, especially in countries like Australia and New Zealand where governments mandated the marketisation of higher educational services in the 1990s and; 5) for-profit arms of traditional universities (Ross, 2009).

[85] www.globalhighered.org/edhubs

[86] www.bc.edu/content/dam/files/research_sites/cihe/pdf/IHEpdfs/ihe59.pdf

hub are the city-states of Singapore and Hong Kong, while at the same time Malaysia and south Korea are orienting their policies towards this direction (DALE, 2009).

Since 2003, Singapore has been focussing its strategy in the effort to become a regional hub for services related to tertiary education, both academic and professional (FITZPATRICK, 2003). The project 'global schoolhouse', set up in 2002 by the government together with its EDB (Economic Development Board), is a strategic plan to lure a large number of international students into its universities and educational institutions.[87]The characteristics of this infrastructure consist in attracting international universities in Singapore, allowing them to build their foreign branch and international campuses, thus diversifying the educational offering of the city-state (TAN, 2004; OLDS, 2007).

The INSEAD institute, the University of Chicago Graduate School of Business (Chicago GSB) and the New York University Tisch School of the Arts are only the most famous institutions which have chosen Singapore to open their international campuses (DUHAMEL, 2004).

[87] I would like to underline that the economic development board (EDB) of Singapore is a statutory body overseen by the Ministry of Trade and Industry. Its involvement in the Global Schoolhouse initiative is a clear indication that the Singapore government has redefined higher education as an industry and business.

Table 8: Foreign universities in Singapore 1998-2011

- Johns Hopkins University
- Massachusetts Institute of Technology
- Georgia Institute of Technology
- University of Pennsylvania
- INSEAD
- University of Chicago
- Technische Universiteit Eindhoven
- Technische Universität München
- Carnegie Mellon University
- Stanford University
- Cornell University
- Duke University
- Karolinska Institutet
- University of New South Wales (end 2007)
- ESSEC
- University of Nevada, Las Vegas
- Warwick University (ended)
- IIM Bangalore
- SP Jain Centre of Management
- NYU (Law and Film)
- DigiPen Institute of Technology
- Queen Margaret University
- ETH Zurich
- Yale

Source: Mapping the Emerging Global Higher Education Landscape, KRIS OLDS, (2010)

This is accompanied by national policies that make it easy to get a vista for studying in this city-state; the magnitude of this process is quite clear: according to a national survey 'Singapore receives an increasing number of international students every year, from 50,000 in 2002, the number has

grown to over 85,000 in 2007. This figure is expected to reach 150,000 by 2015.'[88]

The case of Hong Kong is different in some ways, because its policies do not allow the establishment of foreign branch campuses (LEE, 2000; 2003). However, like Singapore, Hong Kong addresses its policies to luring international students to the city, transforming the island into a RHE (MOK, 2007; UGC, 2004b). This strategic plan is oriented to enhance and redefine the global centrality of Hong Kong through the trade of tertiary educational services in Asia (YANG, 2006), namely transforming its public universities as destinations for increasing worldwide student mobility (LEE, GOPINATHAN, 2002).

In Hong Kong the foundation of this dispositive began immediately after 1997, which marked the independence of this city-state and its post-colonial temporality.[89] In 2002 the University Grants Committee of Hong Kong (UGC)[90] published their 'Report on higher education' proposing that 'Hong Kong develops its capability to export higher education services and eventually becomes the "education hub" in the region' (UGC, 2002). Since then, this plan was further deepened and elaborated, as testified by the Government's document on migration policy[91] in 2004:

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[88] www.financialexpress.com/news/asias-education-hub/690127/(last access March 12, 2011)

[89] On 1 July 1997, the transfer of sovereignty from the United Kingdom to the PRC occurred, officially ending 156 years of British colonial rule. Hong Kong became China's first special administrative region until 2047, under the so-called regime 'One China two Systems'.

[90] The University Grants Committee (UGC) of Hong Kong is a non-statutory advisory committee responsible for advising the Government of the special administrative region (SAR) of the People's Republic of China on the development and funding needs of higher education institutions. (www.ugc.edu.hk/)

[91] This document is part of the major challenges ahead of the Hong Kong Government since 2004. Its main goals for the educational sector are: a]Reform of Academic Structure for Senior Secondary and Higher Education Curriculum Reform; b]School Based Professional

> To develop Hong Kong as the regional education hub, the Government will further relax immigration controls to allow more non-local students to come to Hong Kong for studies with effect from the 2005-06 academic year. (UGC, 2004b)

Subsequently, in 2007 Donald Tsang, the Chief Executive of Hong Kong, decided to expand the population of international students 'increasing the admission quotas for non-local students to local tertiary institutions, relaxing employment restrictions on non-local students, as well as providing scholarships' (CHAN, NG-PAK, 2008).

In the epoch of the so-called knowledge economy, luring international students is, for this city-State (as well as for Singapore), something that goes beyond and exceeds the walls of university institutions (MOK, TAN, LEE, 2000). The challenge to be a global-city [92] is intimately related to implementing international education, as documented by the University Grant Committee (UGC): 'The ambition to be Asia's world city is a worthy one, but there is no doubt that realization of that vision is only possible if it

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Support; c] Introduction of Specialised Teaching in Primary Schools; d]Review of the Medium of Instruction (MOI) for Secondary Schools and Secondary School Places Allocation (SSPA) System; d] Language Education; e] Developing Hong Kong as the Regional Education Hub; f] Further Development of Qualifications Framework. (www.yearbook.gov.hk/2004/en/07_03.htm Major Challenges Ahead last access April 11, 2010).

[92] The notion of a global city refers to the work of Saskia Sassen. According to her, global cities 'are not only nodal points for the coordination of processes; they are also particular sites of production. They are sites for (1) the production of specialized services needed by complex organizations for running a spatially dispersed network of factories, offices, and service outlets; and (2) the production of financial innovations and the making of markets, both central to the internationalization and expansion of the financial industry' (Sassen, 1991).

is based upon the platform of a very strong education and higher education sector' (UGC, 2002).

> Only a few decades ago NY, London and Paris were unchallenged as the main cities of the world. Now Tokyo, Hong Kong and Singapore have earned recognition as 'global cities'. Further challengers can be anticipated. While global cities are certainly interesting in themselves, the process by which cities achieve such status is perhaps even more interesting. (RIMMER, DICK, 2009)

The higher education, the idea of being a global city and the knowledge economy seem to be deeply interwoven: the regional hub of education could position Hong Kong strategically within the 'immaterial' valorisations of capital, transforming this city into a new centre of the fluid hierarchy of global knowledge production.

3.3 HONG KONG AND THE LOGISTIC OF HIGHER EDUCATION

In this section I will focus on Hong Kong such as case study, exploring its policies and transformation to become a RHE. Hong Kong is important because it will show more the contradictions of this global process instead of the linearity related to this transformation inside the higher education. The policies developed by the HK government to become a RHE match to at least three assumptions about education hub strategies described by Kevin Kinser and Jason E. Lane reported in the section above.

Hong Kong's universities exist in close proximity to each other (assumption 1) and the challenge to become education hub is primarily a governmental

strategy (assumption 2). Moreover the case of Hong Kong denotes in a very clear way that a educational hub and the notion of education city are interchangeable concepts (assumption 3).

What is peculiar in Hong Kong, is that the becoming education hub is not driven by the excess domestic demand for higher education: quite at the opposite there is an increasing number of local students that are forced to study abroad in order to obtain their first degree. Most of Hong Kong's students are taking their degree in Australia, UK or Singapore to bypass the quota system of their national university because these latter are increasingly devoted to lure as many international students as possible. It emerges that if Hong Kong claims to lure foreign students, at the same time, the RHE is a *centrifuge* that forces local students to go abroad; this is establishing new frictions between local and global dimensions, rewriting the relationship between national education and citizenship in the form of globalisation.

The international students

The international student recruitment policy of Hong Kong is very different to countries such as Australia and United Kingdom. In fact, in these latter countries this process is based on tuition differentiation that requires international students to pay higher fees than local colleagues (VERBIK, LASANOWSKI, 2007). Since the 1980s, an increasing number of universities in many Western countries need the presence of international students in order

to survive; even more, these institutions were in need of this revenue[93] (NAIDOO, 2007) because of cuts in public funding of education, and the decline of national cohorts due to the falling of the birth rate (FORBES-MEWETT, MARGINSON, NYLAND, RAMIA, SAWIR, 2009). A recent statement of UNESCO reports:

> we note an increasing interest of universities in recent years to attract foreign students for financial reasons. For example, public policies in the U.S., the United Kingdom and Australia of funding higher education in general as well as policies of not funding study provisions for the majority of foreign students led to a vested financial interest on the part of many institutions of higher education to attract foreign students paying high fees. (UNESCO, 2007)

This kind of fiscal differentiation is completely absent in Hong Kong, where it seems that this discrimination is reversed, involving local instead of international students. In fact, while the expansion of the Hong Kong local student population is characterised by an increasing of educational costs and tuition fees (see Chapter 1), this is not the case for the international students, whom, unlike their local colleagues, are beneficiaries of special scholarship

[93] International students are also called 'cash cows'. More about this disparaging definition: 'Cash cow' students take stand against uni (www.theage.com.au/news/national/cash-cow-students-take-a-brief-stand-against-uni/2006/03/13/1142098405192.html). However, this process is rapidly transforming due to the ongoing financial crisis that hit the Western economies since 2008. England has recently approved a law that raises by up to three times the tuition fees paid by local students. This measure, approved amid protests in December 2010, equalises local student fees with international ones. It is possible to observe a sort of 'becoming-foreign' of local students in relation to their access to higher education and welfare state in general.

and subsidies provided by the national Government as a means to lure them to study in Hong Kong.[94]

'Ultimately in Hong Kong only the local students will pay tuition fees, while foreign students will come and study here for free!' (CHEUNG SIU KEUNG, interview). Today this city-state is trying to lure not only students from the West, but increasingly those people from the BRIC countries (Brazil, Russia, India and China). According to professor Hui Po-Keung:

> Nowadays they have discovered that there are an increasing number of interesting people in India and East too, not only in the West, so they are encouraging these countries to joint to our school. From the West to the new BRIC (Brazil, Russia, India, China): the hierarchy in fact is not fixed, but is moving, and I think that is related with the idea of class instead of ethnicity. (HUI PO-KEUNG, interview)

Professor Anthony Fung of the Chinese university of Hong Kong is responsible for recruiting international students for the department of communication and journalism where he works. He told me during the interview:

> My university spent a lot of time trying to recruit international students because the government has new policies of internationalisation. They want those international students coming to the campus, so we spent time

[94] It is enough to mention the Hong Kong PhD fellowship scheme (HKPFS) started on 2009 that aims at attracting students from around the world to pursue their PhD studies in Hong Kong's institutions. The fellowship provides a monthly stipend of HK$20,000 (approximately USD 2,600) and a conference and research related travel allowance of HK$10,000 (approximately USD 1,300) per year to each student, awarded for a period of three years. (www.cerg1.ugc.edu.hk/hkpfs/index.html). In short, a quite generous fellowship compared to the US or Europe.

> interviewing people in the UK and USA principally. But it seems that the international student from the West who wants to study in Asia is going to mainland China, while the Chinese student that wants to study abroad comes to Hong Kong. (ANTONY FUNG, interview)

From interviews that I conducted in 2010, it emerges that most of the so-called 'foreign' students in Hong Kong are from China. In the words of Hui Po-Keung:

> Most of the so-called 'international students' are from mainland China, that means they are not really 'foreign' students. If you accept that Hong Kong is part of China after 1997, only a small part of them are really international. Because the families of mainland China are not rich enough to send their children to Australia or New Zealand, they are choosing Hong Kong as a second choice. (HUI PO-KEUNG, interview)

According to Cheung Siu Keung:

> Despite that the idea of the policy maker is to attract students from the West, the reality is that most of those who came to study in Hong Kong as overseas students are, in reality, from mainland China. In a certain sense, after the handover of 1997, Hong Kong is part of China but its position is still politically unclear. It is a tricky question because Hong Kong is both the inside and the outside of China at the same time. (CHEUNG SIU KEUNG, interview)

For Antony Fung, 'Hong Kong is becoming global through China', while for Lau-kin Chi 'without Chinese students the internationalisation of students in Hong Kong will be not success.' In support of these interviews, a report of

the City University of Hong Kong on the internationalisation of higher education in the UGC funded universities (CHENG, NG SHUN, CHEUNG, 2009) stated that in the academic year of 2007-08, over 92.5 per cent of non-local students in University Grants Committee (UGC)-funded programmes in Hong Kong came from mainland China, while only 4.8 per cent and around 2.7 per cent came from other places in Asia and the rest of the world respectively.[95] The *Tables 9* and *10* below, extracted from the data of this report, display the place of origin of international students:

Table 9: Non-local student enrolment (Headcount) in full-time (FT) UGF-funded programmes by institution and place of origin in 2007-2008

Institution	**The Chinese Mainland**	**Other places in Asia**	**The rest of the world**	**Total**	**As % of total student enrolment**
CityU	781	22	19	822	9%
HKBU	442	2	4	448	8%
LU	125	9	7	141	6%
CUHK	1563	107	27	1697	13%
HKIEd	182	-	-	182	3%
Poly U	859	42	18	919	6%
HKUST	1118	49	31	1198	17%
HKU	1622	112	81	1815	14%
Total	**6732**	**343**	**187**	**7262**	**10%**

Source: Extracted from UGC (2009) www.ugc.edu.hk/eng/ugc/publication/report, in (CHENG, NG SHUN, CHEUNG, 2009)

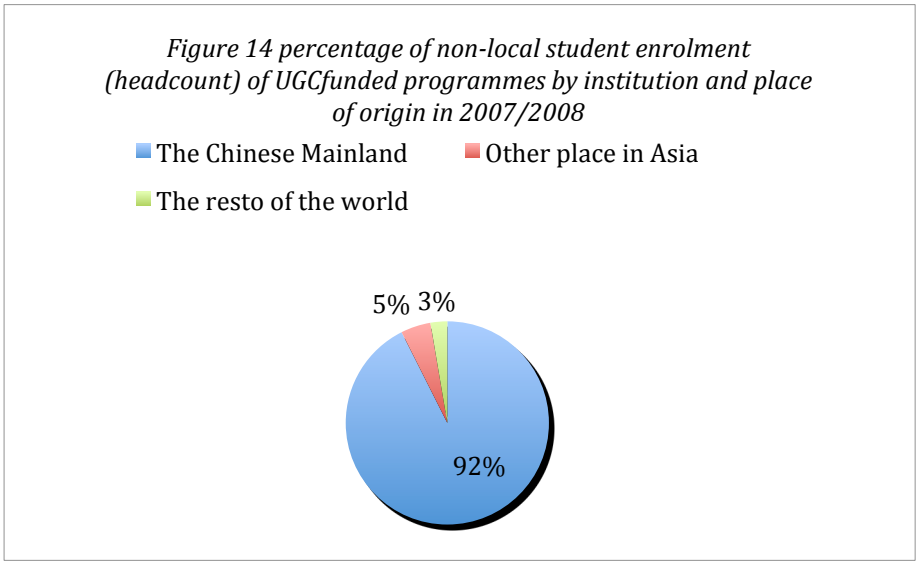
[95] According to the same report, the five leading sources of non-local students from Asia other than mainland China in 2006-07 were Macau, Malaysia, Taiwan, India and Sri Lanka.

Table 10: Percentage of non-local student enrolment (Headcount) full-time and part-time of UGC-funded programmes by institution and place of origin in 2007-2008

	The Chinese Mainland % (Number)	**Other Places in Asia % (Number)**	**The rest of the World % (Number)**	**Total % (Number)**
City U	10.87% (793)	0.30% (22)	0.26% (19)	11.44% (834)
HKBU	6.07% (443)	0.04% (3)	0.05% (4)	6.17% (450)
LU	1.71 % (125)	0.12% (9)	0.10% (7)	1.93% (141)
CUHK	21.45% (1564)	1.47% (107)	0.38% (28)	23.30% (1699)
HKIEd	2.50% (182)	-	-	2.50% (182)
PolyU	11.79% (860)	0.58% (42)	0.25% (18)	12.61& (920)
HKUST	15.36% (1120)	0.70% (51)	0.43% (31)	16.48% (1202)
HKU	22.82% (1664)	1.55% (113)	1.21% (88)	25.57% (1865)
Total	**92.57% (6751)**	**4.67% (347)**	**2.67% (195)**	**100% (7293)**

Source: the percentages are calculated from the UGC figures for the 'non local student enrolment (Headcount) of UGC-funded programmes' by Institutions and Place of Origin 2007-2008, in (CHENG, NG SHUN, CHEUNG, 2009)

Figure 14 percentage of non-local student enrolment (headcount) of UGCfunded programmes by institution and place of origin in 2007/2008



This data confirms the finding of interviews I have conducted: the internationalisation of higher education in Hong Kong is mainly achieved

through Chinese students, which reach over the 90 per cent of the foreign student population taken as a whole.

This report explains this fact almost exclusively through fiscal and economic causes: Chinese students choose Hong Kong because they cannot afford the cost to study to West. In fact, the amount of tuition fees of this education hub is lower than the Western counterpart (CHENG, NG-SHUN, CHEUNG, 2009). In 2009, students from Kuala Lumpur, Jakarta and Mumbai interviewed by these scholars have stressed the economic aspect at the base of their choices:

> some non-local students from selected Asian countries pointed out that the tuition fee of higher education in Hong Kong is lower than that in the Western countries. Besides, financial support in the form of scholarships, studentships, etc. also attracts them to pursue studies in Hong Kong. (CHENG, NG SHUN, CHEUNG, 2009)

The following pages will try to show that if differentiation of university fees is an important element for students in choosing their destination, this however is not sufficient to explain and understand the rising flows of student mobility in Hong Kong. So, first of all it is pivotal to understand why international students consider Hong Kong's institutions as alternatives to the US, British, Australian and Canadian universities.

Analysis of the academic workforce: The indicator of resonance and the empirical measure of internationalisation

> *You must believe me: many of the top Asian scholars of the Universities of Hong Kong are more* white *than the same white colleagues!*
> (CHEUNG SIU KEUNG, interview)

> *As a foreigner you are useful for the institutions, for their contacts, their networks. You gave the university a degree of prestige. It could be strange, racist, but it is kind of truth. Oh, must be good. Chinese are racist, like anyone. I know my role.*
> (HAROLD TRAVER, interview)

I will analyse the composition of the academic workforce of universities in Hong Kong, starting by the explorative definition of the regional hub of education such as a crossroad, a contact zone where a heterogeneous and international composition of students are attending universities that are characterized by a highly international composition of the academic workforce. My hypothesis is that there is a sort of symmetry in the respective composition of the students population and the academic workforce:

the RHE is a geopolitical dispositive of circulation, a contact zone where international students, mainly from countries within Asia, attend universities whose academic workforce has a predominantly Anglo-Saxon and European education. For this reason, in order to verify this assumption I have studied the academic workforce's composition in three of Hong Kong's universities.

Two of them are UGC-funded, that is public funded; they are two 'top universities': the Chinese Hong Kong University (CHKU) and the University

of Science and Technology of Hong Kong (STHKU), which were ranked 40th and 42nd respectively in the QS World University Rankings in 2010.[96] Both of these two institutions are among the top five of the 2011 QS Asia Global Ranking.[97] The CHKU was considered the third best Asian university in 2011, while in the same year the HKSTU ranked first place in this prestigious ranking. According to the QS Asia evaluation, this latter university is considered the best place to study not only in Hong Kong, but also in the entire Asia region.

In addition, I have studied the composition of the academic workforce of Hong Kong Shue Yan University (SYHKU), which is the first (and only) private university in Hong Kong: it does not have a good ranking position either in global or national rankings, and it provides education almost exclusively for local students.[98]

If one refers to the variables 'citizenship' or 'place of origin' of Hong Kong's academic workforce in analysing the internationalisation of the academic workforce, the result is a low degree of internationalisation, and one would be forced to modify the definition of the RHE as a 'zone of symmetrical encounter' between international students and the academic workforce.

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[96]www.cuhk.edu.hk/; www.ust.hk; www.topuniversities.com/institution/chinese-university-hong-kong/wur; www.topuniversities.com/institution/hong-kong-university-science-and-technology/wur (last access July 14, 2011)

[97] The top 10 universities of the QS ranking 2011 Asia are: 1.The Hong Kong University of Science and Technology, Hong Kong; 2 University of Hong Kong, Hong Kong; 3 National University of Singapore (NUS), Singapore; 4 The University of Tokyo, Japan; 5 The Chinese University of Hong Kong, Hong Kong; 6 Seoul National University Korea, South; 7 Kyoto University, Japan; 8 Osaka University, Japan; 9 Tohoku University, Japan; 10 Tokyo Institute of Technology, Japan.
(www.topuniversities.com/university-rankings/asian-university-rankings/2011; last access June 25, 2011).

[98] About this issue see the interviews in Chapter 2.

In this research I developed a indicator to measure the 'internationalisation of academic workforce' focusing on the educational background of the university's faculties.

Indicators are tools that allow us to indicate operational definition, translating into observation what one indicates as hypothesis. In this study I decided to observe the level of the internationalisation of the academic workforce analysing the 'place and universities where the employees in the Hong Kong universities have obtained their PhD'. I call this the 'indicator of resonance' between different universities: it enables us to observe how different regions of knowledge production are coupled together, producing effects of vibration among them. The resonance reveals the relation between two different elements, showing how they take up or repeat the other at another level (PATTON, 1996).[99]

The value of this indicator reveals the organisation of multiple levels within the educational system at a global level, which has different logics and temporal organisations but is locked in resonance.

A high value of the R-indicator (namely if many teachers and researchers of Hong Kong's universities have obtained their PhD outside of Hong Kong), corresponds to a high degree of internationalisation of Hong Kong's universities and high resonance within knowledge production at a global level. A low value of this indicator (that is if few Hong Kong employees have obtained their qualification in one of the eight universities of Hong

[99] In 1665, Dutch mathematician and physicist Christian Huygens (the first scientist to postulate that light consists of waves now known as the Huygens–Fresnel principle), observed that, by placing/hanging two pendulums side by side on the same wall/surface, their swing tended to synchronize, as if 'they wanted to adopt the same rhythm'. The phenomenon called 'resonance' derives from these studies. In the case of the two pendulums it is said that one makes the other vibrate at the same frequency: the coupled oscillations.

Kong), refers to a low level of internationalisation and low-intensity resonance in global knowledge production.

In collecting the data I noticed that the workforce without PhDs are low in the CHKU and in the HKUST, the number of which could be considered almost irrelevant, while this number is relevant for the SYHKU[100]. Moreover, if in the two public universities the absence of this degree for many teachers and researchers is often compensated by their qualified professional positions in the private sector (managers, lawyers, CEOs of private corporations that might counterbalance the absence of a PhD qualification) this is not the case for the SYHKU.

An interesting element to underline, one that has made possible this analysis, is that profiles of every scholar on the universities' websites are written in English and they show not only their degree level, but in most cases, *where* the qualification was obtained, several times only pointing to the place where they have studied (for instance they indicate the place i.e. 'London' or 'US' instead of the name of the university). This is quite remarkable, in particular if compared with the profile of employees in many Anglo Saxon

[100] All data utilised by this analysis is available online, extracted from the official website of the three universities selected; I collected the data in *Tables 11*, *12* and *13* from the period of April to May 2011 (see documents A.5 in Appendix). The picture that emerges is therefore susceptible to changes over time. Data that I have selected, among those available, are constituted by a) the name of the scholar, b) his/her academic position (however this is one that has the most sensitive incompleteness and temporal variability) c) the place and/or the university where the academic workforce studied and received their PhD. They are grouped by universities, schools and departments. Overall the academic workforce analysed, of the three universities involved about 1,600 employees, of whom about 350 were discarded because they did not have a PhD. In *Tables 11*, *12* and *13* below I have not included those who obtained degrees below the PhD qualification.

and European universities where this kind of information appears rarely, or does not appear at all.

I have measured this indicator in the three universities taken into account, using the available data about the place and the universities where the academic workforce employed obtained their PhD qualification, throwing light on the modes of selection and policies of employment of Hong Kong's universities (see documents A.5.1, A.5.2 and A.5.3 in the appendix).

From this analysis emerged a picture that confirms the definition of a regional hub of education postulated in this chapter.

Table 11: Place where the academic workforce of the HKUST obtained its PhD

Country	**absolute value**	**%**
US	338	66.7 %
Canada	45	8.89 %
UK	41	8.1 %
Hong Kong	31	6.12 %
Japan	31	6.12 %
China	15	2.96 %
EU	15	2.96 %
Australia	14	2.76 %
Singapore	2	0.39 %
Total	506	100

Table 12: Place where the academic workforce of the CHKU obtained its PhD

Country	**absolute value**	**%**
US	375	54.42 %
Hong Kong	126	18.28 %
UK	82	11.9 %
Canada	50	7.25 %
EU	19	2.57 %
Australia	14	2.03 %
China	11	1.59 %
Japan	9	1.3 %
Singapore	2	0.29 %
New Zealand	1	0.1 %
Total	689	100

Table 13: Place where the academic workforce of the SYHKU obtained its PhD

Country	**Absolute value**	**%**
Hong Kong	38	44.7 %
US	12	15.29 %
China	11	12.9 %
Australia	7	8.23 %
UK	7	8.23 %
Philippines	6	7.05 %
India	1	1.17 %
New Zealand	1	1.17 %
South Africa	1	1.17 %
Taiwan	1	1.17 %
Canada	0	0
EU	0	0
Japan	0	0
Singapore	0	0
Total	85	100

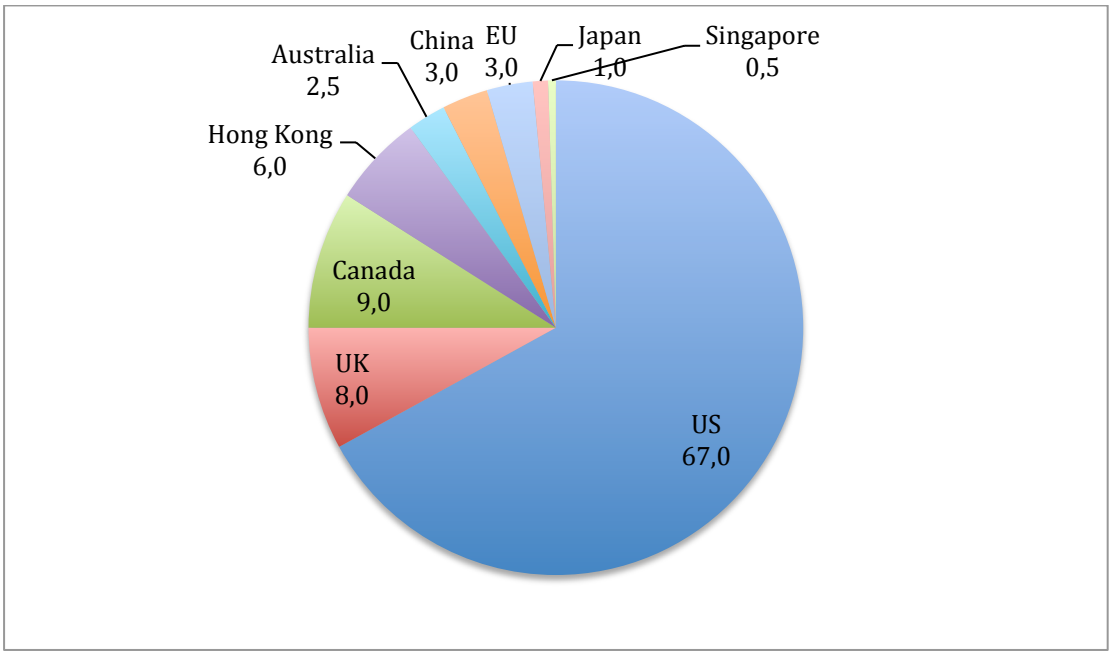

Figure 15: Place where the academic workforce of the HKUST obtained its PhD (as a percentage)

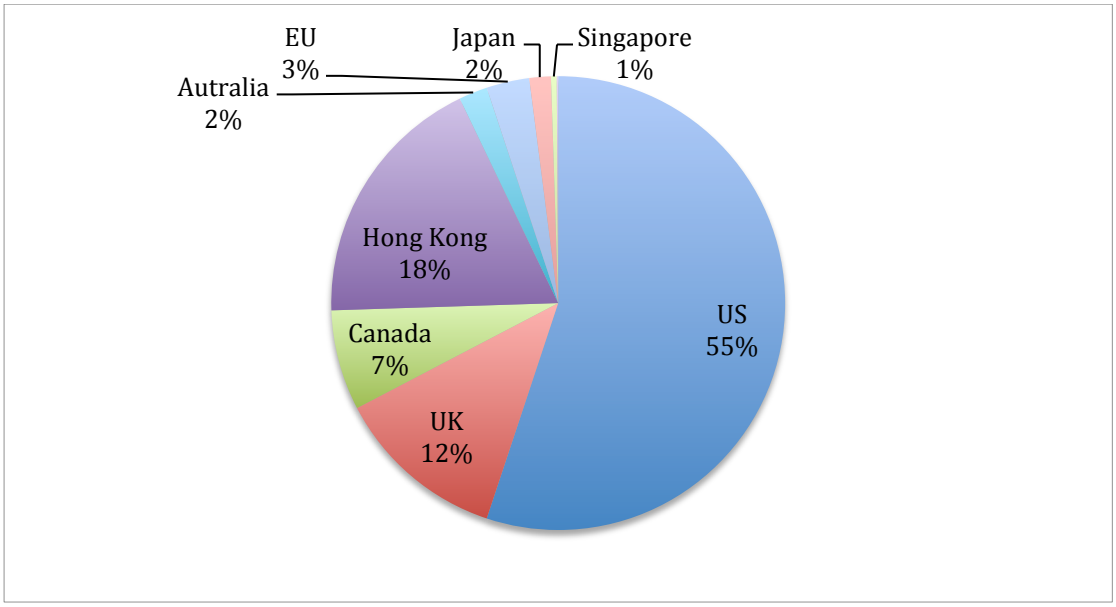

Figure 16: Place where the academic workforce of the CHKU obtained its PhD (as a percentage)

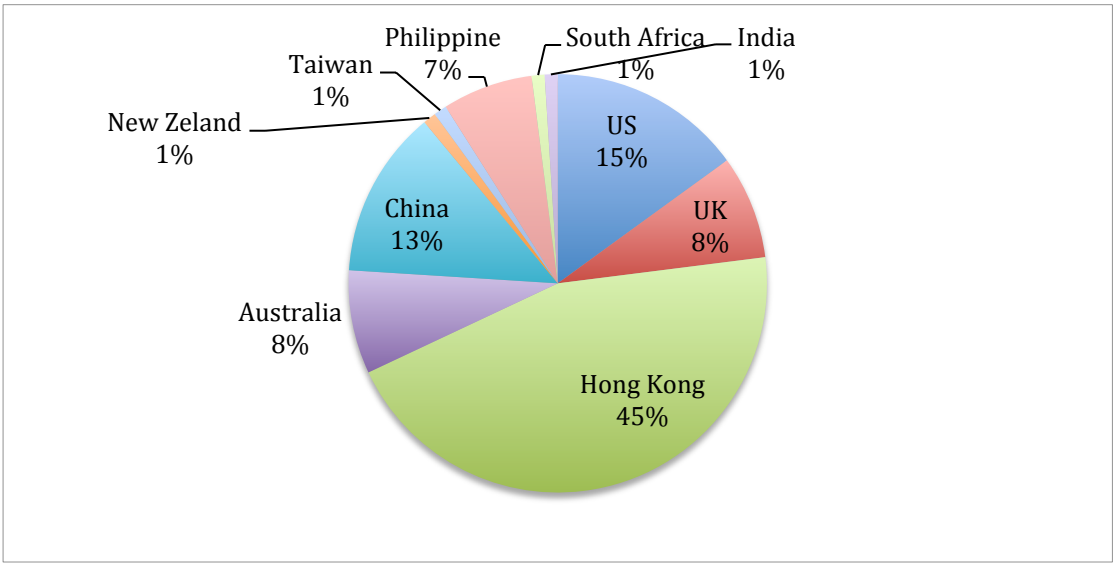

Figure 17: Place where the academic workforce of the SYHKU obtained its PhD (as a percentage)

From *Figures 15, 16* and *17* it is evident that most of academic workforce who teach, research and have administrative roles in the three universities of Hong Kong analysed, got their PhD abroad: 94 per cent of the academic workforce of the HKSYU, 82 per cent of the CHKU and 55 per cent of the SYHKU obtained their doctoral degree in private or public universities outside of Hong Kong. In all the three cases analysed the overall percentage is over 50 per cent, although this data is significantly higher in the two top universities than in the private university of SYHKU.

Deepening the analysis of this data what emerges vividly is its homogeneity: in the two universities that are UGC funded over 50 per cent of the academic workforce has a qualification obtained from a US university (respectively 67 per cent for the HKUST and 55 per cent for the CHKU), while this value is only 15 per cent for the SYHKU.

The Anglo-Saxon and the European universities (US, UK, Australia, Canada and EU) where the academic workforce studied represent respectively 89 per

cent and 79 per cent for the HKUST and for the CHKU, while the figure is only 31 per cent for the SYHKU. This latter private university is also characterised by having the highest number of the academic workforce that obtained their PhD in mainland China, with 13 per cent compared to only 2-3 per cent for the other two universities.

Moreover the value of this indicator referring to Canada and European countries is zero for the SYHKU, while the other two universities denote a significant result: respectively 9 per cent and 3 per cent for the HKSTU, and 7 per cent and 3 per cent for the CHKU. The most heterogeneous finding is observable at the SYHKU: only here countries such as Taiwan, Philippine, India and South Africa are represented. From this data emerges a kind of internationalisation that underlines the syncretism of different temporal dimensions of mobility of the global knowledge production.

Correlating what I have found here with data about the composition of the international students, it is possible to rewrite the previous definition of a RHE in Hong Kong in more precise terms: the RHE is a geopolitical dispositive of circulation, a contact zone where international students, mainly from countries within Asia, attend universities whose academic workforce has a predominantly Anglo-Saxon and European education.

Hong Kong is the West of the Rest: emphasising the complex temporality of post-colonialism, this sentence describes in concise and effective terms what has been observed about the academic workforce of its universities. This definition describes this region in respect to one of the important factors in being able to attract international students.

It accentuates not only the profound similarities between Hong Kong's educational system and that of Anglo-Saxon countries, it also shows how

relations between Hong Kong and 'the West' cannot be underestimated when we attempt to decipher the ability of the RHE to attract students. The educational background of Hong Kong's academic workforce is the most attractive factors for Asian students (the other factor, the English language, will be studied in Section 3.3). The links between the universities of Hong Kong and the institutions of 'the West' described by the educational background of the academic workforce of the CHKU, the HKUST and the SYHKU, show a strong dependence on connections whose effects have a regional and global range.

Data on the composition of the academic workforce that I have presented makes clear that the processes that are enabling Hong Kong to become one of the most influential centres of the immaterial economy in the Pacific region, are based on its relationship with 'the West' and are defining the regional inter-Asian market of higher education.

The displacement and multiplication of asymmetries in Asia

> *Frictions are within the new stratification between research staff and teaching staff: an internal division that maybe it will bigger than the division west/est; new great conflicts will come, and maybe it will be inside the institution; the institutions must facing with that.*
> (RYAN BISHOP, Interview)

Beside the 'symmetry' in the composition between student and the academic workers analysed above, studying the changes of student mobility in Asia should take into account also the *asymmetries* that drive the flows of students.

To address this point I refer to Stuart Hall and his attempt to redefine the meaning of colonial power. In his article *When was the post-colonial? Thinking at the limit* of 1996, he described colonial power as 'displaced and decentred vectors':

> Colonization [...] had to be understood then, and certainly can only be understood now, in terms, not only of the vertical relation between colonizer and colonized, but also in terms of how these and other forms of power-relations where always displaced and decentred by another set of vectors. (HALL, 1996)

Starting from this evocative reflection on power-relations, it is possible to understand the establishment of the Regional Hub of Education as an articulated set of vectors able to decentralise and to displace, both geographically and temporally, relationships of dependence and its asymmetries.

The common educational background of most of the scholars of Hong Kong's universities could be described as a sort of embodiment, or in the words used by Franz Fanon in *Black Skin, White Mask*, a sort of 'epidermalization' of Western education by the universities of Hong Kong. It is a process by which the public universities of Hong Kong 'absorb' the difference with Anglo-Saxon universities. This kind of internationalisation is a sort of 'appropriation' of Anglo-Saxon and European specificity through the selection of the academic workforce, transforming what belongs to the Anglo-Saxon and European universities into something that is no longer associated with their exclusivity in the global production of knowledge. While the differences between Anglo-Saxon, European and Hong Kong

universities are vanishing, the universities of Hong Kong reproduce this same initial difference multiplying it at two levels: a) inside universities and b) within the Asia region.

First of all, it is possible to observe a multiplication of differences inside the universities of Hong Kong; it is a process of displacement and multiplication of hierarchies that produces contradiction, displacing new frictions within the academic workforce.

From the interviews collected during the field research, it appears that in the public universities of Hong Kong, to have a degree awarded by Anglo-Saxon or European universities, although is not a necessary condition to be employed, is however an important factor that may have effects in terms of a university career. In fact, it emerged that one who does not have a certain type of education (namely an Anglo-Saxon or European PhD) is rarely employed in the top public universities and, if that happens, the scholar will occupy the lower position in the academic hierarchy (such as assistant or tutor). Furthermore, holding a PhD from Anglo-Saxon and European universities could assure a full time prestigious academic position, while a local PhD qualification can assure only precarious positions (OIWAN LAM, interview). In the words of Antony Fung:

> Our teaching staff is very internationalised. Having a degree overseas is not a necessary condition to become a teacher in Hong Kong, but it is true that universities tend to favour overseas degrees. So eventually local graduates will not be hired. (ANTONY FUN, interview)

The precarious conditions of employment of Hong Kong's universities are the results of a discrimination based on the positional value of the

'educational credential' in the hierarchy of knowledge production rather than on citizenship or race (see Chapter 2).

At the same time and at another level, it is possible to observe a multiplication of differences utilised to attract students from the South and the North of Asia to Hong Kong.

The educational background of the academic workforce of Hong Kong's universities (as a means used by the institution of Hong Kong to differentiate themselves from other Asian universities of the region), shows that the establishment of the RHE is based on asymmetries that are globally displaced: the market of intra-Asian student mobility represents at the same time this decentralisation and this multiplication.

The new choices of Chinese students to study in Hong Kong related to the Anglo-Saxon and European education of the academic workforce of the HKUST and the CHKU describes a sort of dispersion and multiplication of hierarchies in global knowledge production. While differences are configured as asymmetries and imbalances, RHE is a powerful code of *de-territorialisation* and *re-territorialisation*, a source of innovative geographies while knowledge production becomes spatially dispersed and globally integrated. I will delve into this aspect in the next paragraph.

3.4 THE RHE OF HONG KONG SUCH AS DISPOSITIVE OF 'POSTCOLONIAL DIFFERENTIATION'

In this last section, I will use the lens of the language as a medium of instruction to investigate the various aspects intertwined in the establishment and functioning of the RHE, this latter resulting a really complex dispositive. In Hong Kong, English as medium of instruction coincides with the language of its colonial period, when this region was occupied by British imperialism. It is in this complex interplay between the economic valorisation of global capitalism and postcolonial temporality that one could frame Hong Kong's RHE. In this interweaving of different temporalities, the transformation of higher education problematizes the relationship between the specificity of knowledge and its context of production.

Hong Kong's RHE is a sort of frontline between East and West, between North and South; its history as a former British colony makes this region a space characterised by multiple 'latitudes' where, in the course of history, the intensities of superiority and inferiority of race, culture and domination have been deployed.

Looking deeper into the medium of instruction (MOI) in the Hong Kong's universities, not one but three different languages emerge from the hub of education: the English language, standard Chinese or Putonghua and Cantonese[101]. However, it is not a sort of Babel, where linguistic codes are

[101] In China there is not only one spoken language, but different dialects. However the official language of the PRC is Putonghua, literally 'common language' coined by the linguists Qu Quibai and Lu Xun at the beginning of the twentieth century. It is not an imperial nor a national language, but a sort of *lingua franca* constructed through the social

confused and undifferentiated. Quite the contrary: these three languages are mutually rigidly stratified, occupying different hierarchical positions.

English, namely the original language of the colonial elite, is a means of global trade and financial capital; Standard Chinese is the language of the national Chinese reunification process after 1997; finally Cantonese is the vernacular language developed in this region since the colonial occupation.

Language is a quite complex issue in Hong Kong,[102] and the language policy of this region has very complicated plans and levels, intersections and overlaps further multiplied after 1997, that is since Standard Chinese has become the official language together with English (WING SANG, 2009). However, one needs to be careful not to assign an equal and symmetrical status to these two languages that, in contrast, have weight, status and completely different effects.

Since the British occupation, English was a means through which the British élite was formed in this region. The British Government, in fact, rather than imposing this language on the entire colonised population as a means of social coercion and biopolitical control, used it strictly for reinforcing its colonial power and reproducing the local elite of the region:

> English culture and literature were increasingly confined to a dominant and official status in Hong Kong; it has never become a popular and commonly used language in everyday life. (WING SANG, 2009)

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processes of migration, in order to articulate the differences in communication in the cosmopolitan Shanghai. Subsequently, in 1956, the Putonghua (or Mandarin or Standard Chinese) was adopted by the PRC to designate its official language, that is the national language.

[102] For further discussion on this issue refer to the work of Angel M.Y. Lin and Peter W. Martin in *Language in Decolonisation, Globalisation Language-in-Education Policy and Practice* (Lin, Martin, 2007).

Law Wing Sang tracked the dense debate over English education in Hong Kong during the late-nineteenth century and the beginning of the twentieth century; he studied the policies of Anglicist and Orientalists as well as the writing of James Legge. Using the theory of 'collaborative colonial power', this scholar showed that language was the means by which the ruling Chinese élite of Hong Kong was formed:

> The efforts of these emerging HK-based Chinese elites to defend English language instruction amounted to a highly class-conscious act in which the English language was used as much as a vehicle for imposing cultural domination of one race on another as a cultural capital effectuating class segregation within the same dominated race. (WING SANG, 2009)

The University of Hong Kong (HKU), the first university established in this region under the control of the British government, was an institution devoted to the socialisation of this language and, as a colonial institution, to reproducing the power relations of the British occupation:

> Over the years, the University of Hong Kong (HKU) remained at the peak of the colonial elite education system. [...] Until 1964, the only elite university remained a breeding group of loyal civil servants for the colonial government. (WING SANG, 2009)

This research on the HKU foundation and on the educational system under British rule, showed that the University of Hong Kong was, in fact, a means by which the political, cultural and economical elite of the colonial period was formed and reproduced. During that time, English as medium of

instruction was the mode of access to the most prestigious social positions (WING SANG, 2009). As reported also by Angel Lin: 'English education was favoured by colonial policies and restricted to an élite minority. Then as now, it opened doors to political and economic opportunities as well as to social prestige' (LIN, 2006b).

Because this language was addressed to the ruling class of the colonial government, it has never been socialised to the whole population, so it has never become a popular language in Hong Kong. Instead, Cantonese has taken this role, becoming the Hong Kong vernacular language with the consent of the British rulers. Rather than being a language of decolonisation, this dialect was able to flourish thanks to the colonial power:

> the dominant status of English language is coupled with the absence of imposing British cultural influences on Hong Kong daily life [...] Therefore, ironically enough, colonial rule in HK left a space in which the Cantonese language and culture could and did flourish continuously throughout the twentieth century. (WING SANG, 2009)

While during the colonial period English marked the privileges of the colonial elite, the contemporary role of this language was deeply discussed in Hong Kong especially after 1997 (LIN, 1997), when a great debate about the meaning and status of this linguistic idiom emerged (LIN, MAN, 2009):

> The liberalist idea that each local community can always be 'free' to negotiate its own language and education must be problematised. In postcolonial Hong Kong, the habitus and subjectivity of the English-educated ruling elite in the post-1997 era are not much different from those in the pre-1997 era. [...] With all the social selection mechanisms unchanged

> (across the 1997 boundary) which use a mastery of standard English as a chief screening and gate-keeping measure for access to higher education, the parents', students', teachers' and principals' choices are necessarily constrained under the hegemonic effect of the dominance of English in the society's social mobility mechanisms, which are newly relegitimised in the postcolonial era by globalisation discourses. (LIN, MAN, 2009)

Moreover, since 1997 the English language acquired a social status considered more important than it had during the colonial period:

> The socially and politically divisive character of language use and language education in pre-1997 HK constitutes a thorny legacy not easily resolvable in HK's post-1997 'mother-tongue' education program [...] the majority of Chinese parents in HK perceived its Chinese-language schools to be inferior and therefore persistently shun them. (WING SANG, 2009)

In the last decade, the secondary school was a theatre of protests and debate animated by parents demanding full English education for all of Hong Kong's children.[103] In the postcolonial period of Hong Kong it seems that this language has increased in its desirability as a medium of instruction, parallel and in contrast to the implementation of policies that consider Chinese the post-1997 official mother tongue. Surprisingly, the introduction of the Chinese national language as 'mother tongue' against the former colonial power:

> aggravated the segregation principle by restricting the English language to be used as the medium of instruction only in a few selected schools. Such a

[103] Concerning this issue an important point of observation is the archive of the English newspaper South China Morning Post that dedicated, in those years, lots of attention to it.

> divisive policy has stirred up many more grievances and frustrations than before because, with British colonial influence gone, competition among the parents to tag the class market of receiving English language education for their children is getting even stronger. (WING SANG, 2009)

In this complicated postcolonial period, English became the official language of tertiary education in the universities of Hong Kong. The English language was considered an essential element to transform Hong Kong into a RHE, a means able to ensure not only upward social mobility, but also the worldwide mobility of students. This even though, as I have reported, most 'foreign' students are Chinese.[104] As Hui Po-Keung affirms:

> the language issue is one of the key points of the internalisation process. Despite at least 90 per cent of the population speaking Cantonese, and this is true also for the 'international' student from the South of China like the region of Guangdong, the management of my university forces our students to communicate in English. (HUI PO-KEUNG, interview)

The implementation of English as MOI in the public universities is characterised by difficulties and continuous negotiations between academic workers and management:

> at the Lingdan University all the courses, except the literature and culture of China, must be taken in English. However, there is the possibility to require a different, local language. But you have to apply in advance with a strong reason. Sometime we are forced to teach in English despite all the people of

[104] However, many of them do not speak Cantonese, the vernacular language of Hong Kong and of the South of China, nor do many of Hong Kong's people speak Mandarin.

> the classroom being able to speak Cantonese. It is embarrassing. (HUI PO-KEUNG, interview)

From the same university, Lau Kin-chi affirmed that:

> Since Hong Kong is part of China, in its universities English, not Chinese, is the compulsory language of teaching. Nevertheless, because of lots of protest among teachers and local students, now sometimes there is the possibility to shift language into Chinese. (LAU KIN-CHI, interview)

The same language policy brings frictions, contradictions and paradoxes:

> At the university of HKU they teach Chinese literature in...English! How can you study Chinese literature using an English handbook? It sounds crazy. It does not make any sense. (LAU KIN-CHI, interview)

However, this process is neither linear nor homogeneous: in fact only the top universities (those are public and occupy the best positions in the global rankings and are more involved in the internationalisation process) use English language as exclusive medium of instruction.

While the policies over the English language are more restrictive (exclusive) in the top universities, the second tier institutions of Hong Kong (i.e., less prestigious universities that sometimes are not even present in the global university rankings) are living a quite different reality. Here, in fact, quite often the lessons are conducted not in English but in vernacular language.

This is the case of the Shue Yan University, the private university with less prestige that I have already described above: students from Hong Kong and from the Guangdong region in the South of China (who have a low

proficiency both in English and Chinese), are enrolled in this university. Cheung Siu Keung explained that at the Shue Yan University most of the courses are in Cantonese:

> Despite that after the handover HK is now part of China, I teach not in Chinese neither in English. Despite Cantonese being not an official language for teaching I am teaching in Cantonese, like most of my colleagues at my university. (CHEUNG SIU KEUNG, interview)

The fact that the second-tier private university allows teaching staff to use Cantonese instead of English as medium of instruction, contrary to what happens in the top public universities, is an important element in understanding how the educational system is increasingly segmented and stratified.

While English as MOI identifies the most prestigious and well-reputed universities, the local or vernacular language characterises the lower strata of the same hierarchy, becoming a synonym of absence in international and national prestige. Besides the global and national ranking, which is an important means by which the production of knowledge is hierarchised, this vertical differentiation seems to be reinforced by language.

Angel Lin reported that the position of those who observe the linguistic issue related to global English often oscillate between those who celebrate its spread in a uncritical if not apologetic way (as an innocent and efficient medium for communication and scientific knowledge production), and those who interpret the same process as dangerous with regard to indigenous local cultures and languages (LIN, 2006b). This research, in observing the rise

of the RHE of Hong Kong, has proposed a third position, that is a 'lateral' side focusing on the segmentation and social differentiation associated to a given regime of language.

Studying the MOI of the university of Hong Kong has allowed this research to on the one hand explore critically the functioning of the RHE, highlighting the continuity of English as MOI since the colonial period and on the other hand observe that English language learning is a process of segmentation within knowledge production of the region, dividing universities between top and second-tier.

Hong Kong is a singular case wherein the fact emerges vividly that global English, rather than being a progressive homogenisation at the global level accelerating the cancellation of differences, produces new forms of socioeconomic stratification through knowledge production. The regional hub of higher education and the new circuits of international education don't mean homogenisation through globalisation, but quite the opposite: *differentiation through globalisation*.

The English language, once utilised by the University of Hong Kong in reproducing the élite of the colonial power, today, through the process of internationalisation, is still the medium of instruction of the top Hong Kong universities. It seems that the internationalisation of higher education in Hong Kong is based on the same elements that have characterised the education of this region during its colonial past: the prestige of English, its high economic and social status, seem to be the historical and political resource by which the export of education services through market forces can operate.

The internationalisation of higher education and the inter-Asian student mobility short-circuit with these historical and political elements, bringing

out a sort of 'post-colonial production of knowledge': the English language represents not only the persistence of the past for this region, but is what attracts students to come and study in Hong Kong and divides the educational system into different tiers.

However, this process of stratification and hierarchisation is quite original. If once the public institutions of Hong Kong reproduced the bureaucracy of the British colonial government, marking privileges only for its local ruling class, nowadays this dispositive seems to be displaced and projected onto new ground: that of mainland China and Asia generally.

Looking at the mobility of students and the post-1997 internationalisation of higher education, the establishment of the RHE coincides with the reunification of Hong Kong with China characterised from one side by the growing importance of Mandarin as national language[105]. From the other side, the transfer of sovereignty over Hong Kong from the United Kingdom to the People's Republic of China, is characterised by the use of English as medium of instruction of the public Hong Kong universities. In that

[105] This reunification deals with a new kind of sovereignty: Kuan-Hsing Chen traces the emergence of the Chinese sovereignty on a sort of overlapping between the ethnicity of Han, Mandarin as national language and the idea of nationality: 'Han has never referred to a homogeneous population but to a historically fluctuating, imagined community. In Mainland China, the Han are by far the largest official ethnic group. The nation's official language is [...] Mandarin (also known simply as the national language, or *guòyu*), which uses Hanzi (Chinese characters). In the global context, the word 'Han' is increasingly being displaced by 'Chinese' (for people, *Huàreèn* or *Zhōnggúorén*)' (Chen, 2010). Kuan-Hsing Chen underlines that in this context the Chinese national language or standard Chinese, is merging the meaning of the words 'zhongzu', 'zuqun' and 'minzu': 'To problematize racism is to call attention to the fluidity of terms such as race (zhongzu), ethnicity (zuqun) and nationality (minzu) which now overlap [...] Han is a category of 'nationality', and its relation to minorities is not a matter of 'racial' but of 'national' (minzu)' (Chen, 2010).

framework, the English language seems to work as a means of social stratification *within* this reunification, like 'linguistic (or class) differentiation' among the same Chinese population.

The 'international' Chinese students of the Hong Kong universities are using English language and higher education as an 'instrument for social differentiation among the Chinese' (CHEUNG SIU KEUNG, interview). In Asia, as well as in the Chinese labour market, English language related to higher education seems to be the most effective factor of segmentation, echoing what Etienne Balibar defined as 'racism of the era of decolonization' or 'racism without race', that is 'racism whose dominant theme is not a biological heredity but the insurmountability of cultural differences' (BALIBAR, 1991).

The RHE of Hong Kong show us that higher education nowadays is an important dispositive of differentiation within globalisation, having the same force (or even more) as those of gender or race. In the words of Angel Lin:

> The English-dominant education system seems to have produced an elite bilingual social group whose cultural identities are constructed through their successful investments in an English-medium education, a mastery of the English language and their familiarity with and membership in English-based modern professional institutions (e.g. the various English-based professional associations of accountants, lawyers, doctors and engineers, and English-mediated professional accreditation mechanisms).
>
> At the same time, alongside the production of these English-oriented successful modern professional, cosmopolitan subjectivities, the English-dominant education system also seems to be producing another much larger group of subalterns, whose own understanding of themselves and their

> future life trajectories are greatly delimited by a neocolonial, complex capitalist modern regime of culture that seems to have almost stripped them of any possibility of constructing a valuable, legitimate, successful self with other non-English-based cultural resources. (LIN, 2009)

Within the growing Asian intra-regional mobility, the RHE of Hong Kong emerges as a powerful dispositive of 'postcolonial differentiation', stratification and hierarchy of a skilled workforce within the global labour market.

CHAPTER FOUR

THE COGNITIVE MEASURE AND THE SEGMENTATION OF ACADEMIC LABOUR INSIDE THE TRANSFORMATION OF HIGHER EDUCATION

4.1 FROM THE LAW OF TIME-VALUE TO THE KNOWLEDGE-VALUE OF LABOUR

Le vent se déforme,
Il lui faut un habit sur mesure,
Démesuré
(PAUL ELUARD, L`habitude)

Intangible values and intangible assets, as economists call them, pose a problem because the methods of economic analysis generally rely on quantitative measures and calculate the value of objects that can be counted, such as cars, computers, and tons of wheat. The critique of political economy, too, including the Marxist tradition, has generally focused on measurement and quantitative methods to understand surplus value and exploitation. Biopolitical products, however, tend to exceed all quantitative measurement and take common forms.
(HARDT, NEGRI, Commonwealth)

The crisis of the law of labour-time value and the rising of the knowledge-value of labour

According to the classics author like Karl Marx or even David Ricardo, the value (of commodities) depended on labour time: according to the Marxian general law of value, the cost of a commodity is measured by the homogeneous units of simple direct labour time 'embodied' in that

commodity. 'If we consider commodities as values, we consider them exclusively under the single aspect of realised, fixed, or, if you like, crystallised social labour' (MARX, 1979). In the first volume of Capital he wrote:

> A use value, or useful article has value only because human labour in the abstract has been embodied or materialised in it. How, then, is the magnitude of this value to be measured? Plainly, by the quantity of the value-creating substance, the labour, contained in the article. The quantity of labour, however, is measured by its duration, and labour time in its turn finds its standard in weeks, days, and hours. (MARX, 2006)

A few pages below, the German philosopher wrote:

> Commodities in which equal quantities of labour are embodied, or which can be produced in the same time, have the same value. The value of one commodity is to the value of any other, as the labour time necessary for the production of the one is to that necessary for the production of the other. As values, all commodities are only definite masses of congealed labour time. (MARX, 2006)

Starting from this analysis, Carlo Vercellone affirmed that the historical value theory of capitalism is based on productive labour measured by a certain sort of time: 'the time of the clock and the chronometer' becomes the proper measure of social wealth. For Carlo Vercellone:

> The time of the clock and the chronometer as means for quantifying the economic value of labour and prescribing its operative modes thus

> represents, together with machinery, the essence of the economic and cultural transformation. (VERCELLONE, 2007)

However this theoretical system enters into crisis by the diffusion and the evermore-central role of knowledge in the organisation of production: the classical value theory loses its explanatory force as this process proceeds. Any attempt to take 'the time of immediate labour (directly dedicated to productive activity) as the principal unit of measure and the source of the wealth is now bound to fail' (SMITH, 2010):

> From the moment in which knowledge and its diffusion is affirmed as the principle productive force, the [...] law of value founded on the measure of abstract labour-time immediately dedicated to production enters into crisis. (VERCELLONE, 2007)

The collapse of the law of labour-time value is completed at the present time, when living labour is no longer separated from the general intellect[106]. In this framework time is no longer a valid unit of measurement: the 'quantity' of time referring to the quantity of labour crystallised in the produced goods is no longer an effective measure of value.

To further explain this complex transformation, I will take an example from the academic labour, considering the invention of a good title for a book: what is its value? How does one measure it?

The value of this immaterial commodity is not so much related to the time that the academic workers or the publisher spent to create the right title for the book, especially since the right idea could 'spring to mind' in a place and

[106] About the concept of General Intellect see next section

time that formally have nothing to do with the work paid through a wage (that is, work measured in accordance to the timing of a typical working day). Maybe one found the right word or title while he/she was spending time with friends drinking in a pub, or while he/she was playing with children at home. The value is not defined by the unit of measure of labour-time, but it is associated with the efficacy of social circulation attracting attention and having a social impact on taste and the behaviour of readers and consumers. When the immaterial and cognitive character of labour leads to an extension of the mechanism of extraction of surplus-value to the totality of social times which participate in social production (VERCELLONE, 2007), the boundaries between work and non-work time crumble and the traditional frontiers between productive and unproductive labour disappear:

> the traditional opposition between labour and non-labour loses any foundation in as much as direct labour time itself cannot remain in the abstract antithesis to free time. (VERCELLONE, 2007)

Hardt and Negri make a similar point:

> the production of capital converges ever more with the production and reproduction of social life itself; it thus becomes ever more difficult to maintain distinctions among productive, reproductive, and unproductive labour. (HARDT, NEGRI, 2000)

In this framework the time, as unit of measurement loses its effectiveness to measure the productive labour and the surplus. This does not means that the labour itself, particularly in the form of knowledge, loses its role as principle source of the creation of wealth. We still remain in a Marxian framework

where the labour is the source of the value: according to Carlo Vercellone 'it should be pointed out right away and without ambiguity that this scenario does not mean that labour is no longer the substance and the source of the creation of value and surplus value' (VERCELLONE, 2006). What changes is that it can no longer be measured on the basis of labour-time directly dedicated to production.

I describe this transformation as the historical passage from 'time-value' to 'knowledge-value of labour'.

Following this description I introduce what I call 'cognitive measure', that is a new way of measuring academic labour and the value (of commodities) in the midst of the crisis of the law of time-value of labour. Focusing on the university and the academic labour, the unit of measure that refers to the knowledge-value of labour is based on 'citation analysis': a scientific discipline or 'knowledge' itself that involves a series of dimensions such as the 'impact', 'influence' or the 'quality' of scholarly work.[107] Citation analysis provides data on references cited in footnotes or bibliographies of scholarly research publications (MOED, 2005) and its 'undisputed patriarch' is Eugene Garfield (CRONIN, ATKINS, 2000). In the mid-60s he begins to study the diffusion of scientific knowledge and invents citation analysis and the algorithm of impact factor through which academic labour is measured: the university becomes a sort of foundry for units of measure *alternative* to clock-time and the chronometers. Since the pioneering studies of the Eugene Garfield Association established in 1954 by Garfield, measurements based

[107] According to Henk F. Moed (2005) the term 'scholarly' comprises all domains of science and scholarship, including not only those fields that are normally denoted as science – the natural and life sciences, mathematical and technical sciences – but also social sciences and humanities.

on scientometrics have multiplied and diversified, becoming increasingly sophisticated and important[108]. Examples include the project Web of Science, Scopus, Google Scholar and the H-index.

Garfield introducing his book about the methodology of his work in 1979 stated that:

> almost all the papers, notes, reviews, corrections and correspondence published in scientific journals contain citations. [...] Citations are the formal, explicit linkages between papers that have particular points in common. A citation index is built around these linkages. It lists publications that have been cited and identifies the sources of the citations. Anyone conducting a literature search can find from one to dozens of additional papers on a subject just by knowing one that has been cited. And every paper that is found provides a list of new citations with which to continue the search. (GARFIELD, 1979)

The ISI citation analysis is made possible by the creation of citation indexes, which are databases composed by journals selected by the same company. The first citation index realised by Garfield was the SCI (Science Citation Index) in the 1964, a 'quarterly index covering at that time some 600 scientific journals' (GARFIELD, 1964). After this first database that collected and elaborated only the discipline of science, the ISI began publishing

[108] Ten years later the scientist and entrepreneur changed the name of the company Eugene Garfield Association into the Institute for Scientific Information (ISI), with the aim to provide citation analysis services to an increasing number of institutions both private and public. On 1992 he sold ISI to the famous Thomson Reuters Corporation (Klein, Chiang, 2004). Since 1964 the ISI (a sort of 'immaterial factory' with offices in Argentina, Australia, Brazil, China, France, India, Ireland, Italy, Japan, Korea, Mexico, Singapore, Spain, Taiwan, United Kingdom, United States has been transformed into one of the most important and authoritative providers of a wide array of citation indexing services.

indexes covering other disciplines such as social sciences, arts and humanities. In fact, in 1973 the SSCI (Social Science Citation Index) was established and in 1978 the followed the establishment of A&HCI (Art and Humanities Citation Index).

Table 14: the property databases of Thomson Reuter

Year	**Acronym**	**Full Name**	**Field coverage**
1964	SCI	Science Citation Index	Science
1973	SSCI	Social Science Citation Index	Social Science
1978	A&HCI	Art & Humanities Citation Index	Art and Humanities
2009	WoS	Web of Science	Combined all indexes and includes SCI-Expanded covering additional science journals

Source: thomsonreuters.com

In 2009, after the corporate ISI became property of Thomson Reuter, all the three citation indexes (the SCI, SSCI and A&HCI) were transformed into a electronic version called Web of Science (WoS), as a part of the online project Web of Knowledge (WoK) realised by the Thomson Institute for Scientific Information[109]. The main feature of the citation analysis made by Thomson

[109] The Web of Science is composed by the Thomson Reuter citation databases that includes: Science Citation Index Expanded: 8,300 major journals across 150 disciplines since to 1900. Social Sciences Citation Index: 4,500 journals across 50 social science disciplines, as well as 3,500 of the world's leading scientific and technical journals, to 1900. Arts & Humanities Citation Index: 2,300 arts and humanities journals, as well as selected items from over 6,000 scientific and social sciences journals, to 1975. Conference Proceedings Citation Index: 148,000 journals and book-based proceedings in two editions: Science and Social Science and Humanities, across 256 disciplines. Index Chemicus: 2.6 million compounds, to 1993.

Reuters is that it does not cover the total amount of journals, periodicals, papers and reviews published by the scientific community globally. Results are composed only of those journals indexed in the SCI, SSCI and A&HCI database, which are included through selective criteria: only a small collection of journals among the thousands of publications made each year at the global level, are taken into account.

Mark Garlinghouse, the director of the Asian Thomson Reuters Institute for Scientific Information (ISI), told me that it is precisely this selectivity process that distinguishes this company from competitors:

> For ISI selectivity means quality and rigor in the service we provide to our customers around the world' (MARK GARLINGHOUSE, interview).

However, it is very difficult to know the norms utilised to select and exclude, because this private corporation has never provided a comprehensive and public guideline of its operations[110].

Current Chemical Reactions: one million reactions, to 1986, plus INPI archives from 1840 to 1985.

[110] In this regard, an interesting survey has been made recently by Daniel B. Klein and Eric Chiang: in 2004 they have carried out a meticulous analysis on almost all articles written by Garfield and James Testa (this latter director of the editorial development of the Thomson Reuters ISI) in the last 30 years.

From this research emerged some 'objective' principles utilised by this for-profit corporation to compose its own indexes: first of all, the scientific journals to be admitted in the database property of the ISI must be 'meeting their own publication schedule' and 'maintaining international editorial conventions' that include 'informative journal titles, fully descriptive article titles and abstracts, complete bibliographic information for all cited references, and full address information for every author' (Testa, 2003 in Klein, Chiang, 2004). Moreover 'English language articles titles, abstracts, and keywords are essential' as well as 'being peer reviewed' (Garfield, 1990) and 'having broad geographic representation among the authors of the articles in the journal and of the articles cited' (Testa, 2003).

Since Thomson Reuters is a private company, it does not need to give any public insight about its operating procedures: it means that selection is made by this private company in a non-public way. Decisions are not verifiable in any way, nor are the criteria that guide all the analysis provided by this corporation. While the overall process is controversial and standards are not clear, however what is clear is that the final results about the citations taken into account are exclusively from the small number of selected journals:

> Since the analysis deals with cited references in ISI source articles only, it disregards those given in sources that were not processed for the ISI indexes, including non-ISI covered journals, books, proceedings volumes, reports, patents, and so on. It provides a view of the scholarly communication system seen 'through ISI glasses.' (MOED, 2005)

I will develop later an analysis of this important aspect of cognitive measure based on scientometrics; for the moment I will continue to explore the means by which scientometrics measures academic work and knowledge production introducing the Impact Factor (IF). This is an algorithm[111]

In addition to these general criteria announced in a vague way, these authors have shown another important factor as essential: 'the reliance on journal evaluations by both ISI staff and ISI's "networks of advisors"'(Klein, Chiang, 2004). That means that each journal goes through an 'extensive evaluation process' before being selected or rejected. However, it is almost impossible to know more about the functioning of this 'black box' (Klein, Chiang, 2004). The only public information is that 'the ISI editors performing journal evaluations have educational backgrounds relevant to their areas of responsibilities as well as experience and education in information science. Their knowledge of the literature of their field is extended by consultation with established networks of advisors who participate in the evaluation process when needed'. (Klein, Chiang, 2004)

[111] According to Andreas Blass and Yuri Gurevich in mathematics and computer science, an algorithm is 'an effective method expressed as a finite list of well-defined instructions for calculating a function. Algorithms are used for calculation, data processing, and automated

designed by the company ISI 'as a bibliometric tool to estimate the relevance of a scientific journal' (GARFIELD, 1972) within the Journal Citation Reports project (JCR).[112] The impact factor of a journal is elaborated by dividing the number of all citations received by a journal in a given year by the number of original research or review articles published during the two preceding years. Moreover the JCR contains other bibliometric measures such as the *5-Year Impact Factor*, the *Immediacy Index*, and the *Cited Half-life*. The table below shows in a schematic way different algorithms that compose the project of Journal Citation Reports available online only for paying users:

Table 15: Data in the Thomson Reuters' annual journal citation report

	Definition	*Relevance*
Impact Factor (IF)	Number of all citations of all articles in one journal in a given year divided by the original research and review articles published in that journal during the two previous years	Reflects the average number of citations to articles published
5-years impact factor	Number of all citations which the articles in a journal receive in a given year divided by the number of articles published	Useful in fields where it takes longer than two years to circulate and react to research results
Immediacy index	The number of citations which the articles in a journal receive in a given year divided by the	Indicator of how quickly articles in a journal are cited

reasoning. In simple words an algorithm is a step-by-step procedure for calculations'(Blass, Gurevich, 2003).

[112] According to the official website, the JCR® offers a systematic, objective means to critically evaluate the world's leading journals. It is the most trusted and time-tested journal evaluation resource that provides quantifiable, statistical information based on citation data. By compiling articles' cited references, JCR helps measure research influence and impact at the journal and category levels and shows you the relationship between citing and cited articles (wokinfo.com/media/pdf/jcrwebfs.pdf, last access August 16, 2011). This databank covers more than 9,100 journals from over 2,200 publishers in approximately 230 disciplines from 78 countries: science edition, over 7,350 journals; social sciences edition, more than 2,242 journals. This data is from the official website and refers to 2011.

	number of articles published	
Cited half-life	The median citation age of all the counted articles of a journal in a given year, starting from the time point where half of the citations were made	Indicator of how long-lasting the published research in a journal is
Source: RIEDER, BRUSE, MICHALSKI, FRIESS, 2010		

Despite the value of the impact factor appearing to be objective, replicating the same finding obtained by this algorithm in the JCR is quite difficult. This is because while all citations of the observed journals are counted for the numerator, only 'articles that are identified by Thomson Reuters' employees as "original research" or "review articles" are counted for the denominator, and data on this allocation procedure is not publicly available' (ROSSNER, VAN EPPS, HILL, 2007). They are irreproducible results.

Up to 2004 the database Web of Science of the Thomson Reuter corporation, composed by the ISI Citation Indexes and the Journal Citation Reports, was the most important databank worldwide to calculate and to provide citation data (BAR-ILAN, 2008). But in 2004 the industry of citation analysis changed considerably, that is since two alternatives databases have been available: on 3 November, 2004 Scopus was launched (ELSEVIER, 2004), and on 18 November of the same year Google Scholar appeared (PAYNE, 2004)[113].

[113] In recent years, an increasing number of studies have analysed the different results provided by these new measures: Kathleen Bauer and Nisa Bakkalbasi have compared Google Scholar with the Web of Science recommending that researchers should consult Google Scholar in addition to Web of Science or Scopus, especially for a relatively recent article, author or subject area (Bauer, Bakkalbasi, 2005). Peter Jacso criticises Google Scholar's ability to identify the publication year and the fact that its citations are not always attributed to the correct publication (Jacso, 2005; 2006), concluding that it cannot be a substitute for WoS. Erhard Rahm and Andreas Thor point out the usefulness of Google

Scopus 'provides citation coverage from 1996 and onwards', and claims to be 'the largest abstract and citation database of research literature and select results from the web' (from the Scopus website)[114].

Google Scholar, unlike the other two competitors, is freely accessible. Its index contains data from publishers 'only if the publisher is willing to provide at least the abstract of the paper freely, while viewing the full text may be fee or subscription based' (BAR-ILAN, 2008). Moreover, it does not provide any explicit information either about the number of records or its time coverage, while its data comes from 'many disciplines and sources: articles, theses, books, abstracts and court opinions, from academic publishers, professional societies, online repositories, universities and other web sites'.[115]

In August 2005, the panorama of scientometrics analysis was further enhanced since the physicist Jorge E. Hirsch released the so-called H-index algorithm based on the distribution of citations received by a given researcher's publications.

Scholar in evaluations in the area of computer science (Rahm, Thor, 2005) while Kayvan Kousha and Mike Thelwall also found that the overlap of citing documents between WoS and Google Scholar is rather low in some cases and only 33 percent for chemistry (Kousha, Thelwall, 2006). The studies of Judy F. Burnham (2006), Debora Shaw, Liwen Vaugha (2006) and Nisa Bakkalbasi, Kathleen Bauer, Janis Glover, Lei Wang (2006) and Alireza Noruzi (2005) testified to the growing importance of these new measures and the progress made in recent years.

[114] It contains '45.5 million records, nearly 19,500 titles from 5,000 publishers worldwide and includes over 4.6 million conference papers'.[114] Like the project Web of Science of Thomson Reuter, Scopus provides citation data only for the items indexed by it (Bar-Ilan, 2008).

[115] scholar.google.com/intl/en/scholar/about.html (last access February 12, 2010)

Following J. E. Hirsch:

> a scientist has index h if h of his/her numbers of papers have at least h citations each, and the other (Np − h) papers have no more than h citations each. (HIRSCH, 2005)

According to this measure, a scholar with an index of h means that he/she has published h papers each of which has been cited by others at least h times. Thus, 'the h-index reflects both the number of publications and the number of citations per publication' (HIRSCH, 2005)[116].

As one can see, we are in the midst of a wild proliferation of citation analysis and bibliometric instruments that make increasingly varied the cognitive measure; this multiplication of means brings a diversification of its results: in this scenario there is no longer a single and definitive measure that is effective and valid once for all. This detail discloses the artificiality and arbitrariness of this new measurement grounded on different and alternative indicators and algorithms, thus revealing heterogeneous measures of knowledge production and its circulation. Each database and algorithm inevitably refers to different results, most of them owned by private corporations for which access is allowed only to paying customers: in fact one important aspect of cognitive measure is that it reinforces both intellectual and private property.

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[116] Soon after this algorithm appeared, in 2006 the Egghe's g-index was proposed by Leo Egghe aiming to improve the h-index by giving more weight to highly-cited articles (Egghe, 2006). Then, recently, in 2009 Zhang's e-index was proposed by Chun-Ting Zhang in order to differentiate between scientists with similar h-indices but different citation patterns (Zhang C.T., 2009). More about new academic algorithms and their results on Anne-Wil Harzing's website: www.harzing.com/pop

The impact factor and the H-index algorithms among others, the database SCI, SSCI and A&HCI as well as the platform Web of Knowledge, Google Scholar and Scopus provide measures based on information, analysing the number of citations per author and published article. In some way, this measure is a kind of knowledge, or better a 'knowledge over the production of knowledge' that organises, segments and differentiates it. This cognitive measure produces effects, practices and prescriptive rules through the 'formalisation' of algorithms: that is a standardisation of the qualitative dimension of knowledge, a formal representation of its social and communicative dimensions.

According to Maurizio Lazzarato, while labour becomes increasingly immaterial, also measure becomes more and more immaterial and cognitive:

> the most deterritorialied (abstract) elements of the new nature of labour are overthrown by the apparatuses of capture to capitalize the most different kinds of labours' (LAZZARATO, 1997).[117]

Thomson Reuters Corporation and other agencies have transformed university into a foundry for new units of the measure of value based on the circulation and dissemination of knowledge: cognitive measure and the knowledge-value of labour that emerges are at the same time the enunciation of new and original kinds of values, like the value of attention, the networking value, the value of dissemination and of social impact. This transformation should be framed within the hegemony of the living labour

[117] Translation mine. Here the original Italian: *gli elementi più deterrritorializzati (astratti) della nuova natura del lavoro che sono rovesciati dagli apparati di cattura per capitalizzare i piu diversi tipi di lavoro.*

that, far from eliminating the contradictions and the antagonisms of capitalistic production, *displaces* them into a new ground, increasing their significance. This displacement means new and original forms of exploitation of the workforce where not only production, but also capitalistic command becomes more and more 'cognitive' and 'immaterial'. I will explore that in the next sections.

Metamorphosis of labour

> *The management theories assume the role of political philosophy and Peter Drucker is the new Machiavelli.*
> (BOLOGNA, 2007)

> *Labour is the living, form-giving fire; it is the transitoriness of things, their temporality, as their formation by living time*
> (KARL MARX, Grundrisse)

We are living in a historical period where different regimes of production coexist in a kind of 'exposition universelle' (VIRNO, 2002); beside the commodity production that is the main feature of capital valorization, there is a sort of 'postmodern capitalism centred on the valorisation of immaterial capital' (GORZ, 2010). The production of commodities by means of commodities described by PIETRO SRAFFA half a century ago (1960) becomes production of commodities by means of knowledge (RULLANI, 2004), production of knowledge by means of knowledge (VERCELLONE, 2002) and production of goods by means of language (MARAZZI, 2002).

In this context what does productive labour mean[118]?

> The labour of material production, measured in units of products per units of time is replaced by the so-called immaterial labour, on which is no longer applicable the classic units of measurement. (GORZ, 2010)

While learning and producing are overlapping and the old forms of interpretation as well as measurement appear to be inadequate, the university (the place of higher education and producing knowledge par excellence), is acquiring a new meaning and particular function. The university has been characterised by rapid and profound changes: this educational institution, once the formal legitimator of 'intellectual labour' has been the theatre of its radical transformation[119]. Today the academic labour is intertwined with increasingly entrepreneurial and managerial duties and abilities such as managing social networks, relationships and winning research funding (STRATHERN, 1999).

In 1995, Jeremy Rifkin published a book entitled *The end of work* which analysed around ten years of changes to labour in the most advanced economies of global capitalism. According to Rifkin, by now machines should have freed people from working, leaving them only to look after how to spend their newfound leisure time. In the same period Robert Reich

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[118] For productive labour I refer to the Marxian idea of labour that produce surplus value, that is capital, and is the opposite to unproductive labour (See Marx, Capital, vol.1).

[119] Useful reading and debates on academic labour, are in the journal Workplace (ojs.library.ubc.ca/index.php/workplace/index). Moreover it is interesting the zero issue of notes of edu-factory (www.edu-factory.org/edu15/webjournal/n0/webjournal.pdf). In the last few years the most interesting book on this issue are: The University Against Itself: The NYU Strike and the Future of the Academic Workplace edited by Monika Krause, Mary Nolan, Michael Palm, Andrew Ross (2008). How University Works by Marc Bousquet (2008) and the Manifesto of a Tenured Radical by Cary Nelson, 1997.

published the book *The work of the nations*, wherein, as can be garnered from the title, the word 'work' regains the scene: human labour is once again placed at the centre of economic valorisation instead of machines, technology or capital (BOLOGNA, 2007).

However it is not *general* human work, rather it is *cognitive* labour that is taking centre stage. Researchers, teachers, computer experts, creative workers, students, hackers, nurses, media employees, system analysts, financial advisors, brokers and scholars... all these kinds of workers usually defined as 'brainworkers' or 'social workers' (NEGRI, 1989) should remind us that we are in the midst of the 'new economy', also called the era of the 'information society' (WEBSTER, 2002; LIU, 2004).

Thinking about banking, insurance and financial services, rather than educational services provided by universities, the Research and Development laboratories or the professions related to 'care' and affective labour, moreover, thinking about the creative and cultural industries, Google.com rather than Baidu.cn: in all these sectors the object of production is communication, knowledge, social relations, affects and culture (MARAZZI, 2002).

Robert Reich, in trying to represent this historical temporality proposed the figure of the 'symbolic analyst', that is those:

> Who [...] simplify reality into abstract images that can be rearranged, juggled, experimented with, communicated to other specialists, and then, eventually, transformed back into reality. (REICH, 1991)

However, what had the strength to prevail in this context was the definition 'knowledge worker' proposed by the economist PETER DRUCKER (1967)[120].

During the same years Andre Gorz and, so-called Italian Operaismo, particularly thinkers such as Paolo Virno, Christian Marazzi, Maurizio Lazzarato, Antonio Negri and Carlo Vercellone, have introduced different theories to account for the increasing importance of knowledge in capitalistic valorisation and commodities production from the critical point of view of Marxism.

Maurizio Lazzarato, in describing the changes in capitalistic valorisation, has introduced the category of 'immaterial labour' referring to two different aspects of labour:[121]

> On the one hand, as regards the *informational content* of the commodity, [immaterial labour] refers directly to the changes taking place in workers' labour processes in big companies in the industrial and tertiary sectors, where the skills involved in direct labour are increasingly skills involving cybernetics and computer control (and horizontal and vertical communication). On the other hand, as regards the activity that produces the *cultural content* of the commodity, immaterial labour involves a series of activities that are not normally recognized as *work* – in other words, the

[120] The literature about this new figure of production has described it within the 'habitat' of the firm instead of the factory: an environment more suitable to the 'development of competences' and a 'new *polis* where social values can be preserved' (Bologna, 2007).
At the same time, the work relationship has been completely redefined through the financial market for recognising the productivity of labour: being paid by shares and dividends of companies becoming the alternative to the traditional wage relationship of employment.

[121] This definition of the new features of labour characterised the analysis of Operaismo concerning the transformation of capitalistic production during the 1960s and 70s. This school of thought, which had the ability to weave together theoretical analysis and political practice, emphasised the social and cooperative features of the antagonistic relationship between capital and labour in recent decades.

> kinds of activities involved in defining and fixing cultural and artistic standards, fashions, tastes, consumer norms, and, more strategically, public opinion. (LAZZARATO, 1996)

In another piece of writing, the same author defined immaterial labour through its *extensive* and *intensive* dimensions: extensively immaterial labour 'is the form of cooperation that extends itself as social cooperation, beyond the factory and so-called productive labour' (LAZZARATO, 1997). [122] Intensively it is defined by the elements of language, information and communication: 'in this new capitalistic configuration communication and language has become the engine of economic valorisation' (LAZZARATO, 1997).[123]

In addition to the immaterial labour theory, one must mention the research on the 'operaio sociale' by Antonio Negri[124], the studies about 'cognitive labour' by Carlo Vercellone and the idea of the 'general intellect' of Paolo Virno. All these analyses are based on Karl Marx's text, both famous and controversial, the so-called *Fragment on machines* from the *Grundrisse: foundations of the critique of political economy*. In these pages Marx affirmed that abstract knowledge – in the first place scientific knowledge, but not only that – begins to become, precisely by virtue of its autonomy from production, the principle productive force, relegating parcelised and repetitive labour to

[122] Translation mine. Here the original Italian: *Il lavoro immateriale é definito attraverso la forma della cooperazione che si estende, in quanto cooperazione sociale, al di là della fabbrica e del lavoro produttivo.*

[123] Translation mine. Here the original Italian: *Nella nuova configurazione capitalista la comunicazione e il linguaggio diventano il motore della valorizzazione.*

[124] More about the category of Operaio Sociale in: The Mass Worker and the Social Worker (A. Negri,1982)

a peripheral and residual position (VERCELLONE, 2006). In this analysis Marx used the famous definition of the 'general intellect':

> The development of fixed capital indicates to what degree general social knowledge has become a direct force of production, and to what degree, hence, the conditions of the process of social life itself have come under the control of the general intellect and have been transformed in accordance with it. (MARX, 1979)

While Marx identified the general intellect and social knowledge with fixed capital and the 'embodiment' of scientific knowledge, Operaismo's interpretation of this Marxian passage linked the concept of general intellect to a theory of living labour:[125]

> We should consider the dimension where the general intellect, instead of being incarnated (or rather, cast in iron) into the system of machines, exists

[125] According to Jason Read the term 'living labour' plays both a rhetorical and a conceptual role in Marxian thought. Rhetorically, 'it informs and underlies an entire metaphorics that presents the opposition between living labour, in the form of the working class, and "dead labour," as capitalist wealth and machinery, as the opposition between "life" and "death"; or, more dramatically, life and the "living-dead monstrosity of capital"' (Read, 2003). Alongside, and implicated within this rhetorical use, there is a somewhat different sense of living labour: 'not so much opposed to the dead labour of capital – fixed capital – but understood as the aspect of labour implicated with the needs and demands of the working class. This aspect of living labour is ultimately unruly in that it is labour as activity, as creative power, as the pure power to produce the new' (Read, 2003). For Hardt and Negri living labour is what constructs the passageway from the virtual to the real; it is the vehicle of possibility: 'Labour that has broken open the cages of economic, social, and political discipline and surpassed every regulative dimension of modern capitalism along with its state-form now appears as general social activity. Labour is productive excess with respect to the existing order and the rules of its reproduction. This productive excess is at once the result of a collective force of emancipation and the substance of the new social virtuality of labour's productive and liberatory capacities' (Hardt, Negri, 2000).

> as attribute of living labour. The general intellect manifests itself today, above all, as the communication, abstraction and self-reflection of living subjects. (VIRNO, 1996)

Operaismo affirms that the link between knowledge and production cannot be limited to the system of machines, but articulates itself in the linguistic cooperation of men and women, in their acting in concert:

> It seems legitimate to maintain that, according to the very logic of economic development, it is necessary that a part of the general intellect not congeal as fixed capital but unfold in communicative interaction, under the guise of epistemic paradigms, dialogical performances, linguistic games. In other words, public intellect is one and the same as cooperation, the acting in concert of human labour, the communicative competence of individuals. (VIRNO, 1996)

In the so-called post-Fordist production a decisive role is played by conceptual constellations and schemes of thinking that 'cannot ever be recuperated within fixed capital, given that they are actually inseparable from the interaction of a plurality of living subjects' (VIRNO, 2002). The progressive rupture between the general intellect and fixed capital, which leads to a progressive redistribution of the general intellect into living labour, characterised the analysis of Operaismo on the transformation of capitalistic production. As Paolo Virno wrote:

> Marx conceives the general intellect as 'a scientific capacity' objectified within the system of machines, and thus as fixed capital. He thereby reduces the external or public quality of intellect to the technological application of natural sciences to the process of production. The crucial step consists rather

> in highlighting to the full the way in which general intellect, rather than being a machina machinarum, comes to present itself finally as a direct attribute of living labour, as a repertoire of a diffuse intelligentsia. (VIRNO, 1996)

Today, according to this tradition, what is increasingly important for current capitalistic valorisation is living labour, where the product is not separable from the act of producing. Understanding the general intellect as living labour means, first of all, that to be valued are those generic communicative and organisational skills of the workforce. As affirmed by Michael Hardt and Antonio Negri:

> The jobs for the most part are highly mobile and involve flexible skills. More important, they are characterized in general by the central role played by knowledge, information, affect, and communication. In this sense many call the postindustrial economy an informational economy. (HARDT, NEGRI, 2000).

The progressive importance of living labour in capitalistic valorisation is related to the increasing importance of social relationships and cooperation: instead of remaining in the background, the act of cooperating and linguistic integration comes to the very foreground. Social cooperation become central in the productive process, becoming a specific 'product' of the activity of labour itself, that is 'something that is promoted, elaborated and refined by those who cooperate' (LAZZARATO, 1996)[126].

[126] At the same time this cooperative and social dimension involves consumers: immaterial goods consumption is realised by sharing, while cultural contents are 'consumed' by socialising and multiplying them (Marazzi, 2002) and the value of commodities like software, books, films etc. lies in their sharing power, which means dissemination by socialisation (Rullani, 2001).

Emphasising the progressive hegemony of living labour, Operaismo elaborates an idea of historical transformation as break, which is realised through discontinuity. According to Jason Read:

> Living labour is labour power defined in opposition, or better, in antagonistic relation to, capital. If the capitalist mode of production is founded on valorization, the increase of surplus value, then living labour is self-valorization. As capital seeks to reduce necessary labour and increase surplus value, living labour seeks to increase necessary labour and thus increase the effectivity of needs and desire. (READ, 2003)

In this way Operaismo has re-framed the Marxian concept of tendency within the antagonism of the capitalistic relationship: 'when the general intellect affirmed itself as productive force, the domination of dead labour over the living labour enters into crisis' (NEGRI, VERCELLONE, 2007).

4.2 COGNITIVE MEASURE INSIDE THE UNIVERSITY

Examination, verification and passing of judgment: The 'specialist' and measure within the university

In this section I will focus on how cognitive measure and its techniques are implemented in the higher education, focusing on the academic labour and on the broad university context. I will start by exploring the assessment of *research output*, *faculty productivity* and *teaching quality* that, since the mid-80s, nowadays has characterised the functioning of university institutions. This

kind of evaluation of academic labour is increasingly based on the SCCI, SCI and A&HCI indexes, rather than on the value of the Impact Factor and scientometrics in general.

It is possible to observe the beginning of this process coincident with the introduction of New Public Management (NPM) in British institutions, first developed by the 1980s Thatcher governments in the UK which 'imagines national systems as economic markets and universities and other higher education institutions as firms driven by desires for economic revenues and market share' (MARGINSON, 2010). This model rests on a neo-liberal conception of public administration and education which derived originally from MILTON FRIEDMAN (1962) and F.A. HAYEK (1960) [127].

According to Simon Marginson, this neoliberal approach to understand academic institutions is characterised by heterogeneous and opposite forces, describing a kind of 'double move': from one perspective it is possible to observe a process of 'deregulation' of the 'university-as-firm' to respond to the labour market; from another point of view, there is a 'over-regulation of

[127] The paradigm of the NPM involves the managerialisation of institutions as 'one best way' of modernisation and functioning of the public sector. The NPM has emerged first in the Anglo-Saxon countries especially in Britain, representing a synthesis between the business administration developed in US and the neoliberal approaches of international agencies such as the OECD, the World Bank and the MFI. The principles that guide the reinvention of government (Gaebler, Osborne, 1993) introduce into the public administration a corporate culture oriented to results, standard and performance measurement (Fassari, 1994). The templates of the new public management include: a] the modeling of national systems as economic markets; b] government steered competition between institutions, and executive-steered competition between academic units; c] part-devolution of responsibility for administering and often for raising finances; d] incentives to reduce costs per unit, and to engage in entrepreneurial behavior; e] new or augmented price
signals; incentives to link with business and industry; f] performance measures and output-based funding; g] relations with funding agencies and managers based on quasi-corporate forms such as contracts, accountability and audit. In the last two decades these reforms have been the strongest single driver of change (Marginson, Van der Wende, 2006).

academic output as performance' (MARGINSON, 2010). This so-called 'over-regulation' of academic life deals with the implementation of cognitive measure based on scientometrics, which manages and guides the expenditure and research investments of a university, defining at the same time a new kind of control over the academic labour.

The evaluations of research and of the 'quality' of education in the Asian universities are increasingly based on indicators such as the number of publications and the value of the impact factor of journals where academics publish their work. In the East Asian Hong Kong was the first country to introduce 'quality assurance measures to monitor the higher education sector' (MOK, LAU, 2002): it includes the research assessment exercises (RAEs), the teaching and learning quality process reviews (TLQPRs), and the management reviews (MRs).

According to Angel Lin, among these three, the RAEs have become the most important measure introduced by the University Grants Committee into the public universities (LIN, 2009), linking research output to funding allocation of the universities, dividing the academic workforce between 'active researchers', that is faculty members with research output above the threshold level set by the UGC, and who are considered below these productivity standard:

> Research output is measured mainly in terms of the number of articles published in recognized journals in different citation indexes: the Science Citation Index (SCI), the Social Sciences Citation Index (SSCI) and the humanities and social sciences index (A&HCI) […] The university funding of the University Grants Committee for teaching and researching are tied up to results: the more 'active researchers' academic departments possess, the higher the amount of research funding it will obtain. (LIN, 2009)

The same aspect is traceable within the public universities of Taiwan where, since 2000, a new 'academic performance evaluation system' for both social sciences and scientific knowledge has been introduced. This kind of assessment has been promoted zealously by Taiwan's social science academic circle and, according to Arthur Hou-ming, it has changed radically the academic life of the public universities: it is a sort of watershed before and after the application of the SCI and SSCI criteria to measure academic labour (HUANG, 2009).

In addition to these proprietary databases utilised to evaluate knowledge production, the National Science Council has sponsored the Taiwan Social Science Citation Index (TSSCI) to measure academic productivity and to create a 'new standard' for the evaluation system. This database that is national instead of private, reinforces the bibliometric and quantitative analysis by which resources are allocated, the educational system is differentiated and competition is promoted among scholars and universities.

Also in mainland China, scientometrics is increasingly utilised to measure the quality of research, the productivity of scholars and didactics of its universities. The differential allocation of funds for the key universities of the 211 and 985 projects is based on different principles (Lai, Lo, 2007), of which the most important are the 'research output' and the 'key input data' results, measured through scientometrics.[128]

[128] This kind of evaluation is intertwined with the original process of devolution that is changing the role and the competences of the Central State, the Communist Party and faculties. According to Mohrman (2008) this devolution of power is counter-balanced by an increasing of control through such evaluation plans, funding allocation, accountability requirements. In the Chinese universities the loss of power and direct control by the Central State and Party 'increasing the evaluation of departments and individual professors. Peking

> The evaluation of the [Chinese] key universities is made by the examination of the 'research output data' (publications, citations, citation impact, percent cited, highly cited papers from Web of Science) and 'key input data' (R&D expenditures; R&D personnel; PhD students from China Science and Technology Statistics, Statistics of Universities). (LAI, LO, 2007)

This kind of measurement involves different actors, both public and private: this is evident in the cooperation between the Chinese Social Sciences Research Evaluation Center (CSSREC) and Thomson Reuters ISI. That partnership, initially established to evaluate the research performance from a scientometrics perspective (YUE, ZHU, 2009; YUE 2009), recently has developed the Chinese Social Science Citation Index (CSSCI),[129] that is the first database of scientific publication in Chinese, which will be progressively integrated in the already existing ISI Web of Knowledge of Thomson Reuters.[130]

The services provided by this multinational are very important for quality evaluation and the research assessment of universities in Hong Kong, Taiwan and China. In 2008, in this latter country this corporation was mentioned by the Chinese Minister of Education as a 'leading player for the appreciable improvement in national education quality' (WEIPING YUE, interview). That company plays the role of 'expert' in quality of knowledge

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and Tsinghua universities, among others, have established specialised units for evaluation and quality control, while faculty publications and research grants are carefully monitored' (Mohrman, 2008).

[129] The official website: www.cssci.com.cn/eindex.htm (last access October 10, 2010)

[130] This project increases the Web of Knowledge coverage by adding selected Regional Content collections (specifically Citation Indexes) to the platform. This project is constituted by a dual language infrastructure, with a database that is searchable in both English and Chinese (Yue W., 2009).

and research, providing its services to an increasing number of institutions according to Mark Garlinghouse, director of Thomson Reuters ISI in Asia:

> universities come to us because we are experts in improving research and evaluate better research assessment.[131] Public universities ask us for the same types of question: they want to be able to evaluate their research, they want to be outstanding and competent to manage better their research and teaching; sometime they want just to make money, and we help them. (MARK GARLINGHOUSE, interview)

So, assessment is affirming through the creation of a new figure: the 'expert' or the 'specialist' which includes 'educational development consultants', 'quality assurance officers', 'staff development trainers' and 'teaching quality assessors' (SHORE, WRIGHT, 2000). These specialists employed both in private and public companies, agencies and institutions develop a new 'knowledge over the knowledge' which create a template of norms and normative grids for measuring both individual and organisational performances. In this way cognitive measure based on scientometrics and citation analysis is applied in the academic milieu through 'examination' and 'verification' referring to the principles of 'scrutiny' and the 'passing of judgement'. This measurement, in the academic context, refers to the continuous controls over the academic labour and departments, transforming the assessment into something that is at the same time 'hierarchical and paternalistic' (SHORE, WRIGHT, 2000). The figure of the specialist is opposed to those that are evaluated, judged, measured, those whom have no right of reply; it is essentially a 'relationship of power

[131] These services provided by Thomson Reuter are called 'practice of science' and 'business of science'.

between scrutinizer and observed: the latter are rendered objects of information, never subjects in communication' (SHORE, WRIGHT, 2000).

The overlapping between research evaluation and university ranking

Focusing closer on the field of cognitive measure in the higher education, one of its most interesting aspects is that the results of this measurement and evaluation are publicised through the format of rankings. ELLEN HAZELKORN, reporting on the research of M. Clark (2005), wrote that:

> evaluations' results are often published in a hierarchical format called 'league table' growing convergence between assessment and rankings. (HAZELKORN, 2011)

The evaluation becomes a process of comparison in a space that is heterogeneous and relative by necessity, while the implementation of cognitive measure is intertwined with hierarchies that are becoming increasingly important in the evaluation. In this kind of 'becoming-ranking' of the evaluation itself, the cooperation that characterises academic labour is transformed into competition, while the circulation of knowledge becomes a 'dividing practice' within the scientific community.

A significant example of what I am affirming is represented by the Academic World Ranking University (AWRU), that is the first global university ranking released by the Shanghai Jiao Tong Institute of Higher Education (SJTIHE) and its Research Centre for World-Class Universities.

While the expansion of higher education, as I show in Chapter 1, is characterised by an increasingly stratification of the Chinese educational system, the Shanghai Jiao Tong University (having become a key university part of the 985 project) has established the SJTIHE research centre to improve its position in this competitive system:

> The initial aim of this research centre was simply to promote 'internal' evaluation, defining our academic performance compared to the other; in this first stage the results of our evaluation were not public. Then in 2003 we published for the first time our work on the website of our research centre, and it became a great success, visited from all over the world.
>
> At the beginning we just collected several indicators; they were simply tools to study which policy the Shanghai Jiao Tong University needed to be developed in order to improve its research capacity. These indicators were the number of articles indexed in SCI (Science Citation Index) and SSCI (Social Sciences Citation Index), as well as the number of the highly cited researchers. Both these indicators were provided by Thomson Reuters. Moreover the research centre added the number of articles published in the journals Nature and Science as a supplementary assessment indicator (EMPLOYEE AT THE AWRU, interview).

Subsequently other indicators have been introduced and, together with those previously used, have formed the infrastructure of this really prestigious international academic ranking of world university. This ranking originally released for internal purposes, was made public by the Jiao Tong University, turning the 'inside' into the 'outside' like a glove: evaluation started to speak the grammar of competition and stratification even for those universities not selected by this ranking, which cover only 500 of the

approximately 15,000 universities existing worldwide today (HAZELKORN, 2011)[132].

The ARWU represents the most effective and advanced dispositive of measuring: it is based on citation analysis provided by the private and for-profit corporate Thomson Reuters, which have a weight of around 40 per cent of the overall evaluation of teaching and research quality of universities[133] (in the appendix, the *Tables 16* and *17* show indicators that compose the ARWU with their weights and definition).

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[132] According to Ellen Hazelkorn, it is possible to trace three distinct phases of the university ranking industry: the first is between the 1960s and 70s, the second period covers the 1980s and 90s, finally the third phase, in which we are today, started with the AWUR publication on 2003. In the first phase, rankings often used several 'dimensions of quality, inter alia, faculty expertise, graduate success in later life and academic resources, such as faculty/student ratio or volumes in the library' (Hazelkorn, 2011): 'This first period was dominated by Hayward Keniston's Graduate Study and Research in the Arts and Sciences at the University of Pennsylvania (1959), Allan Carter's Assessment of Quality in Graduate Education (1966), Kenneth D. Roose and Charles J. Andersen's Rating of Graduate Programs (1970), Peter Blau and Rebecca Zames Marguiles' ranking of professional schools in Change magazine (1973, 1974/5), Everett Carl Ladd Jr.'s and Seymour Martin Lipset's rankings published in the Chronicle of Higher Education (1979), and one published by the National Academy of Sciences (1982) (Hazelkorn, 2011). The second phase started with the U.S. News and World Report Best College Rankings (USNWR) in 1983, which introduced for the first time a large survey of 1,300 presidents of colleges (Brooks, 2005). Moreover, this second period of ranking is characterised by a multiplication of these instruments both at the national and international level rating, classifying and measuring different universities and disciplines. Finally, the third period: 'is marked by the arrival of global rankings in 2003 which relies primarily on reputational factors with a heavy emphasis on bibliometric indicators and citations drawn from Thomson Reuters's Web of Science or Elsevier's Scopus databases (Hazelkorn, 2011). So, the academic ranking of world universities (ARWU) based in China represents the beginning of this contemporary era of the global ranking.

[133] Moreover, the weight of 20 per cent of the articles published in Science and Nature, and the 30 per cent determined by the winners of Nobel prizes in the sciences and economics and Fields Medals in mathematics show the deep imbalance in favour of the hard-science disciplines.

Beside the AWUR, other important rankings of this third phase are Webometrics (produced by the Spanish National Research Council), THE-QS World University Ranking (THE-QS) released in 2004, the Taiwan Performance Ranking of Scientific Papers for Research Universities (HEEACT) in 2007 and USNWR's World's Best Colleges and Universities in 2008. Moreover:

> The Leiden Ranking (2008), developed by the Centre for Science and Technology Studies (CWTS) at the University of Leiden, uses its own bibliometric indicators to assess the scientific output of over 1,000 universities worldwide, while SCImago (2009) uses the Elsevier Scopus database. [...] The THE-QS partnership split at the end of 2009 resulting in QS World University Rankings (which retains its relationship with USNWR) (2010), and THE Thomson Reuters World University Rankings (THE-TR) (2010), the latter representing a significant entry into the market by the producer of one of the major bibliometric databases. (HAZELKORN, 2011)

Today we are facing a move from national to global and regional ranking; this is the case of Europe, which established a new regional multi-dimensional ranking. The U-Multirank 'aims to create a multi-dimensional system which will rank institutions according to different dimensions, but no overall institutional indicators or aggregation into a total score or profile' (HAZELKORN, 2011). Moreover Salmi and Saroyan have counted around 50 different national rankings (SALMI, SAROYAN, 2007) both for-profit and not-for-profit that are updated annually: a multiplication that enriches the complex panorama of the production of this sector.

In this overlapping between cognitive measure and the ranking format is evident to observe how the objective data of scientometrics functioning,

more and more, as a means of segmentation and classification within the affirmation of the knowledge-value of labour. Moreover, the becoming-ranking of evaluation involves university in general and the same academic workforce; in fact there is a sort of *continuum* between the individual level of measure and the institutional level. Cris Shore and Susan Wright affirmed that these procedures used to construct evaluative grids – such as competitive league tables and performance charts – are able to simultaneously rank institutions and individuals against each other. 'A pecking order is created not only between differentially ranked universities and departments, but increasingly between individuals – who are now being informally referred to in reference to research assessment grades, as a '3b', a '4' or a '5' rated academic performer' (SHORE, WRIGHT, 2000). The next section will explore how this dispositive works deeply, dividing and reinforcing segmentations not only between different institutions, but also the same workforce of university.

4.3 THE EFFECTS OF THE COGNITIVE MEASURE ON THE ACADEMIC LABOUR AND ON THE KNOWLEDGE PRODUCTION

The cognitive measure and the segmentation of academic workforce

> *The SSCI and the impact factor will leave academics with no intellectual freedom at all if the tenure system will be also cancelled or undermined*
> (WANG XIAOMING, interview)

Studying cognitive measure and scientometrics in the past sections, I have shown the practices of assessment and its relationship with the global ranking of universities. Starting from what I introduced as cognitive measure, I will trying to describe its effect and implication on the academic workforce, identifying the silhouette of what Foucault called 'the conduct of individuals', that is:

> the way in which one conducts oneself, lets oneself be conducted, is conducted, and finally, in which one behaves as an effect of a form of conduct as the action of conducting or of conduction. (FOUCAULT, 2009)

The cognitive measure and the measurement of value that I have described involves new forms of rationalising the management of the academic workforce in the era of the hegemony of living labour: measuring academic labour means at the same time to control and to command it. Studying the cognitive measure in the university reveals original command relationships,

new contradictions and its dislocations when economic valorisation is based on knowledge production; at the same time this field refers to original kinds of workforce resistance and lines of flight.

Exploring this hypothesis, first I will describe the relation between cognitive measure and employer management of academic labour through the wage relationship in the milieu of the university.

The cognitive measure of labour involves the hiring, layoffs and career advancement of the academic workforce, managing the professional careers and the employee/employers relationship within universities. As Audrey Baneyx wrote that 'we live in an age of metrics. Citation analysis now has important implications for grants, funding, and tenure decisions' (BANEYX, 2008), while Simon Marginson affirmed:

> Rankings and publication/citation metrics are potent administrative technologies with the capacity to shaping academic careers at the point of hiring and promotion. (MARGINSON, 2008)

Cognitive measure orients the decision-making process about faculties and academic employed, managing their career advancement as well as their discharge (CALHOUN, 2006; BORGMAN, FURNER, 2002; WARNER, 2000; WEINGART, 2005). From Singapore to South Korea, from universities in China, Hong Kong and more worldwide, academic careers are regulated according to the values of the Impact Factor algorithm rather than the results of publications indexed in the SCI, SSCI and A&HCI database.

> At my university [Shanghai University] whether a scholar gets the position of assistant professor, receives tenure and is promoted to full professor

> depends to a large extent on his/her publication and citation record, as published in the various rankings. (LEI QILI, interview)

Moreover, according to Lei QiLi:

> In China many universities, when posting job position for new faculty, explicitly mention that those with SSCI publications will be stronger candidates. (LEI QILI, interview)

While this happens in China, Myungkoo Kang, in a survey on the working relations within South Korean universities, has shown that not only are academics and teachers 'compelled to publish their work in the SCI or SSCI index journal', but 'the number of publications in those journals are the *measure* for tenure and hiring new faculty' (KANG, 2009, emphasis mine).
The fact that publishing in a prestigious journal can provide great stimulus to moving in the right direction along the career path (CHANG, MCALEER, LES OXLEY, 2011) is confirmed by interviews collected at Hong Kong. According to Antony Fung:

> if you work at the UGC funding university of Hong Kong, then publications are really important. You have to perform well to stay in the university, which means you have to perform well with publications. At the Chinese University of Hong Kong no valuable publication means being fired. The management of university values your work through the specific index of SSCI. To get a promotion they count how many publications and your articles are in the SSCI index. We have to publish at least one article in one of the top journals per year; but if your paper is not in the top tier of journal, one article is not enough and you have to publish more.

> For the tenure professor, after six years you have published at least six articles in the top tier journals of the SCCI index. In terms of promotion the university want to first see your publications. (ANTONY FUNG, interview)

The academic life within an Asian university is characterised by the continuous pressure to publish as much as possible as a requirement to work in the institution; this entails a radical redefinition of time and priorities for scholars:

> forcing to publish changes your time and shapes your time within the academia; they forced you to write, consuming time in this way instead of organising a symposium, meeting, research event or, even better, building networks with civil society. (CHEUNG SIU KEUNG, interview)

Professor Traver described it using a strong metaphor:

> your chance to survive as a scholar is based on the citation analysis of Thomson Reuters, following the logic of 'publish or perish'. The evaluation system of Hong Kong is like a gun put on your head. To be honest, there is too much pressure on academic performance and on the academic workers in general. (HAROLD TRAVER, interview)

The working conditions of Hong Kong are the same in Singapore where the National University (NSU) puts pressure on the labour force to publish as much as they can to stay in the university:

> They ask you to publish as much as you can, but they don't tell you the minimum threshold that should be respected; they do that simply to increase internal competition among scholars. (INGRID HOSFAM, interview)

According to Cris Shore and Susan Wright, who have studied the working conditions of academia, 'the intention of this pressure is to keep people on their toes by making them feel insecure' (SHORE, WRIGHT, 2000).[134] The same scientometrics instruments (originally developed to measure and assess knowledge in the social context of the scientific community) according to DANIEL KIRCHHOF (2007) have undergone a progressive 'distortion' becoming 'anomalous' often being applied to singular scholars. It is the case of the algorithm impact factor transformed into 'personal impact factor' as reported by Howard Hunter, president of the Singapore Management University (SMU):

> SMU tenured faculty is made by peer review, research output, research productivity, and measuring of quality of this productivity. We measure the 'personal impact factor' (PIF) of each scholar that we are employing. The reason for the SMU success is because our leadership is recruited carefully. We have to measure according to the international standard. (HOWARD HUNTER, interview)[135]

This measuring is used to decide whether or not authors get promoted, are given tenure or are offered a position in a department; this is confirmed by studies of B. KIRCHHOF, N. BORNFELD and F. GREHN (2007), who showed how

[134]Developing this analysis these scholars have utilised the metaphor of the panopticon to understand the control over the academic workforce: 'as Foucault noted, the effect of constant surveillance in prison is to instil anxiety such that inmates come to scrutinize their own behaviour and eventually adopt the norms of conduct desired by the disciplinary institution – whether or not the guards are in the watchtower' (Shore, Wright, 2000).

[135] Howard Hunter President, Singapore Management University, 2004– August 2010.

this system is used to measure the 'quality' of individual paper, and the same 'individual quality' of scholars:

> The IF has developed significant influence beyond its original goal [and] it is used to measure the quality of scholar and teacher by the number of publications in journals with high impact factors. The sum of IF points of a person is considered as a measure of his individual research quality. (KIRCHHOF, BORNFELD, GREHN, 2007)

The sharpest effects of cognitive measure on academic career are observable in junior scholars, who are newly appointed members of the profession and for that reason need to constantly prove their qualifications;[136] 'the youngest scholars must accept being evaluated by rules they have no say in the making' (CHEN, CHIEN SECHIN, HWANG, 2009). A young lecturer at the Lingnan University told me:

> I feel blackmailed. I mean you can't refuse rules simply because you can't afford it: I am not a full or senior professor, that means I don't have autonomy; like all my young colleagues in the academia, we are continuously under threat. (INTERVIEW OF ACADEMICS OF CHKU)

At the same time, from the materials collected, it is possible to observe a process of interiorisation of the normative elements of cognitive measure at the beginning of academic life. Simone Marini, a PhD student at his first year at the HKSTU told me:

[136] Maybe it is not by chance that the most radical critics of this kind of measuring and its logic were organized by junior scholar in Asia; the most important protest was at the National Chung Cheng University of Taiwan in April 2004 (Chen, Sechin, Hwang, 2009).

> Personally I'd rather have few publications but high-level. I am telling you that despite that I have not published anything yet. I never tried, because I am at the beginning. Nevertheless I know that I have to be careful choosing journals. I want to publish in top journals, and only there. It is quite simple understanding where is better to publish: just look at the impact factor. (SIMONE MARINI, interview)

The PhD is a sort of socialisation to this regime of measure and its logics, regardless of whether one has already published papers or not. Ambitions for academic careers are means of internalising norms and rules: this aspect put into crisis the rigid boundaries between the objectivity of measure and the subjectivity of evaluation, showing that that the 'objective' conditions for measuring passes through the 'subjective' expectation of personal success in the academia.

Another aspect of cognitive measure on academic labour deals with the wage system as differentiated process: in fact, the salary and wages of the academic workforce are increasingly composed of individual rewards and cash bonuses granted depending on journals where one is able to publish.[137] A recent survey made by Chiara Franzoni has showed that this model of wage management is prevalent in Asia (FRANZONI, 2011). *Table 18* below shows the financial rewards for publications based on the papers published in journals listed in different databases at Taiwan's universities:

[137] Chiara Franzoni in her recent article *Changing incentives to publish* (Franzoni, 2011) defines three distinct dispositive to differentiate wages in relation to the submission and publication of academic papers: 1. personal incentives that reward publication success with direct cash bonuses (practices common in China, Korea, and Turkey); 2. institutional incentives that link publication success with departmental funding; 3. personal incentives that link publication success with individual career success – promotion, tenure, and salary increases.

*Table 18: the prizes for publications on the journals listed in different databases (reported in NT Dollar)**		
Universities	**Prizes (SCI, SSCI, A&HCI)**	**Prizes (TSSCI)**
Yuan Ze University	NT$ 10,000	
Soochow University	NT$ 50,000	NT$ 30,000
National Hualien Teachers College	NT$ 30,000	NT$ 15,000
National Taipei Teachers College	NT$ 30,000	NT$ 10,000
National Chengchi University	NT$ 20,000	NT$ 15,000
National Chiayi University	NT$ 8,000	NT$ 8,000
Shih Hsin University	NT$ 10,000	NT$ 10,000
Tung Hai University	NT$ 30,000	NT$ 20,000
Nan Hua University	NT$ 50,000	NT$ 20,000
National Chi Nan University	NT$ 15,000	NT$ 15,000
Chinese Cultural University	NT$ 40,000	NT$ 20,000
National Yang Ming University	NT$ 100,000	
Da-Yeh University	NT$ 10,000	NT$ 5,000
I- Shou University	SSCI NT$ 60,000 SCI, A&HCI NT$ 20,000	
NationalChengKung University	NT$ 200,000	
* The salary for a scholar per-month is NT$ 65,000-130,000		
Source: HUANG, 2009		

In particular, this differentiation of the wage by cognitive measure is evident in the Chinese universities (JUFANG, HUIYUN, 2011): the basic salary (around 5,000 Yuan) could be increased markedly in relation to publications and the value of the journal's impact factor where one publishes. *Table 19* shows the direct monetary reward of scholars based on the impact factor score of the journal in the Guangzhou medical university: it is possible to observe that the basic salary can be multiplied by 40 times!

Table 19: the direct monetary reward of scholars base on the IF journal	
Journal Classification	**Monetary Award**
Nature or Science	200,000 RMB (first author); decrease by 50% according to the sequence of authors
SCI journals (first author)	
IF<1	2,000 RMB
1<IF<3	3,000 RMB
3<IF<5	4,000 RMB
5<IF<10	5,000 RMB
IF> 10	14,000 RMB
This data represents the monetary reward system in Guangzhou Medical University, in (JUFANG, HUIYUN, 2011)	

The wage differentiation on the basis of number and kind of publications introduces a high degree of uncertainty in the academic labour market and workforce flexibility: the salary received by academics become conditional, provisional and relative. The cognitive measure makes the work relationship flexible and individualised since an increasing portion of salary is determined by the workforce ability to publish in a selected number of journals to maintain his/her job occupation. The cognitive measure is the filter through which hiring and shaping the academic career is conducted, showing an original form of remuneration that transforms the classical wage relation into a kind of *meritocratic dispositive*.

Data analysis introduces the possibility that different levels of wages correspond to scholars which occupy the same academic level, while workers are asked to identify themselves with their institution, improving the position of their university in the global ranking. This kind of wage relationship is associated to the individual productivity of scholars, underlying the high *reversibility* of payment made by cash awards and

bonuses that refer to the constant evaluation of the individual performance of the workforce. Competition, differentiation and individualisation are the three main features of the new wage relationship: cognitive measure introduces a high degree of flexibility into the academia, while at the same time the workforce is segmented and differentiated through internal hierarchies and income lines.

Hierarchy and the grammar of cognitive measure: the geopolitics of knowledge production.

> *The effect of the Thomson Reuters' measure is that creates some new hierarchies, this is a fact. We hold the mirror in which the scientific community, that is self-created, can look at networks made by citation analysis*
> (MARK GARLIGHOUSE, interview)

One of the most important aspects of cognitive measure refers to the reinforcement of the hierarchies and asymmetries that are at the same time both socio-historical and political. In fact, the body of the academic workforce is differentiated not only through wage grids, but this stratification passes also through language: the SSCI, SCI and A&HSI database rather than the impact factor algorithm calculated by Thomson Reuters are all English-centred indexes, since the service provided by the American company Thomson Reuters only covers publications in English (as I demonstrate in previous chapters)[138].

[138] This selective criteria excludes all the other important international languages such as Spanish, Chinese, Malayan, Arabic, and French – let alone national languages like German, Japanese, Korean, etc. Thomson Reuters justifies this on the basis that 'English is the

Moreover, recent studies about the Impact Factor have demonstrated that the value of this algorithm for the English-language journals is generally higher than those published in other languages (RIEDER, BRUSE, MICHALSKI, KLEEFF, FRIESS 2010), while those originating in the United States also seem to have a higher Impact Factor than the English-language journals originating elsewhere (MUELLER, MURALI, CHA, ERWIN, GHOSH, 2006). It means that if publishing in English counts more than in Chinese or other languages, publishing in a US-based journal is even more important. For this reason scholars, in order to guarantee career advancement in the academy, are driven to publish as much as possible in English; not only that: instead of publishing their research results in local journals or other influential non-English periodicals they have to publish in US-based journals to increase their 'personal impact factor'. This is confirmed by the interviews I have conducted in Hong Kong:

> If you publish in French or Chinese journal it doesn't count. The only language that really matters for your career is English. More precisely: you must publish in Western journals, which are the only valuable publications of academia. This is an unwritten rule of the Hong Kong universities and, as often happens, the unwritten rules are the most important ones to follow. (HUI PO-KEUNG, interview)

According to Cheung Siu Keung:

> In Asia the measuring system of academic life makes most articles written in Chinese have no status. Take the example of Hong Kong: the academic

universal language of science at this time in history' (Thomson Reuters reported in Hazelkorn, 2011).

> system discriminates Chinese papers; it means that if you write in Chinese, nobody will count your work. Research papers written in English or published in international journals are much more highly regarded than Chinese ones. The only language that matters is English. As a consequence, we are facing a marginalisation of the Chinese language.
>
> Lots of the time I feel very frustrated having to write in English and not in Chinese; this is because the only motivation to write is for the applications for the academia, that is becoming more and more separate from real, social life.
>
> When I am writing in Chinese, it seem to me that my work does not count as research, but as a sort of community service, for the society; instead when I write in English it is for publication, but it does not count as a community service. (CHEUNG SIU KEUNG, interview)

If Philip G. Altbach claims that in the US academy non-English language research 'is published and cited less often' than others (ALTBACH, 2006), for Chen Kuan-Hsing the fact that important non-English-language journals are not taken into account, despite their long history and good reputation, is a significant distortion of the international circulation of knowledge, especially with regard to the human sciences (CHEN, 2009). In these disciplines, languages (often national idioms) constitute an important aspect of knowledge production:

> suppose a paper has been written in Chinese, translated into Japanese and Korean, published in notable Japanese and Korean periodicals, and widely cited: now, surely this paper won't be covered by the SSCI indexing systems, whose international significance is thus severely restricted. (CHEN KUAN-HSING 2009)

I have affirmed that the language that matters for scientific publications is English; nevertheless one needs to complete this assertion because the current language of the academia is 'Standard British English' (SBE) and 'General American English' (GAE), which are codified in grammatical descriptions, dictionaries and manuals of usage (KACHRU, BRAJ, 1985). According to Yamuna Kachru and Cecil L. Nelson it is this codified language that is used in academic knowledge production:

> the varieties of English that are commonly accepted and are considered 'legitimate' for educational purposes all over the world are American and British English. The other varieties, Australian, Canadian and New Zealand English, are still trying to achieve legitimacy. (KACHRU, NELSON, 2006)

The SBE and the GAE are defined by researchers on World English (WE) as language of the 'core circle', thus differentiated from the languages of the 'outer' and 'expanding circle'. These studies on variants of English in the worldwide speakers community has produced a taxonomy representing the historical specificities, the cultural and social differentiations through the metaphor of concentric circles. In this regard, Angel Lin clearly wrote:

> those English varieties spoken in Anglo countries (e.g., the UK, the US, Australia, Canada) are called 'core' or 'inner circle' varieties, while those spoken as second languages (ESL) (e.g., India) are called 'outer circle' varieties. Those spoken in place as foreign languages (EFL) are called 'expanding circle' varieties. An image of three concentric circles (inner circle, outer circle, expanding circle) is used to build a model of hierarchy of Englishes, each having different status and authority. The inner circle varieties are norm-giving; the outer norm-developing; and the expanding circle varieties norm-dependent. (LIN, 2009)

Yamuna Kachru and Cecil L. Nelson, in their study on the 'pluricentricity of English' and the various languages wrote:

> The Inner Circle comprises the 'mother country' – England and the British Isles – and the areas where the speakers from Britain took the language with them as they migrated – Australia, New Zealand and North America.
> The Outer Circle comprises the countries where the language was transplanted by a few colonial administrators, businessmen, educators, and missionaries, and is now nurtured by the vast majority of indigenous multilingual users. They use English as an additional language for their own purposes, which include many national and international domains.
> The Expanding Circle represents the countries (e.g., People's Republic of China, Japan, Korea, Thailand, countries of Europe, the Middle East, and Latin America) where the language is still spreading, mainly for serving the need for an international medium in business and commerce, diplomacy, finance, and other such spheres. (KACHRU, NELSON, 2006)

The SBE and GAE correspond to the codified grammar of the inner circle, which is used to legitimate in the academic context against the mutations that English has experienced through the socio-historical processes of appropriation and its post-colonial hybridisation[139]. The circulation of

[139] 'Appropriation' describes the strategy by which the dominant imperial power incorporates as its own the territory or culture that which it surveys and invades. However, post-colonial theory focuses on the ways in which the dominated or colonised culture can use the tools of the dominant discourse to resist its political or cultural control (Ashcroft, Griffiths, Tiffin, 2000).
The most evident case of postcolonial hybridisation is the Singlish, that is the pop language of Singapore and symbol of the local national identity. After Singapore declared independence in 1965 Singlish began to evolve among the working classes who learned English without formal schooling, becoming the identity of the post-colonial era of Singapore.

academic knowledge strengthens the codification and immutability of languages, defining a specific linguistic hierarchy that is at the same time the effort to strengthen an historical and political order. This kind of grammar spoken through the circulation of knowledge and preserved by cognitive measure of academic labour maintains, if not reinforces, the immaterial boundaries of national idioms that correspond to a hierarchy of regions and geographical spaces.

An asymmetrical order of knowledge production based on the dichotomy centre/periphery is evident observing the regional composition of journals indexed in the SCI, SSCI and A&HCI databases utilised by citation analysis. *Figure 18* and *19* shows the composition of academic journals of science (*Figure 18*) and social science (*Figure 19*) of the Journal Citation Report of Thomson Reuter[140]. These journals constituted the base on which this company calculates the value of the impact factor.

[140] The figure 18 and 19 was composed analyzing data from the platform webofknowledge.com, using the account of the Queen Mary University of London to access in (from June to August 2011)

Figure 18: number of Journal of the JCR social science edition by country 2010

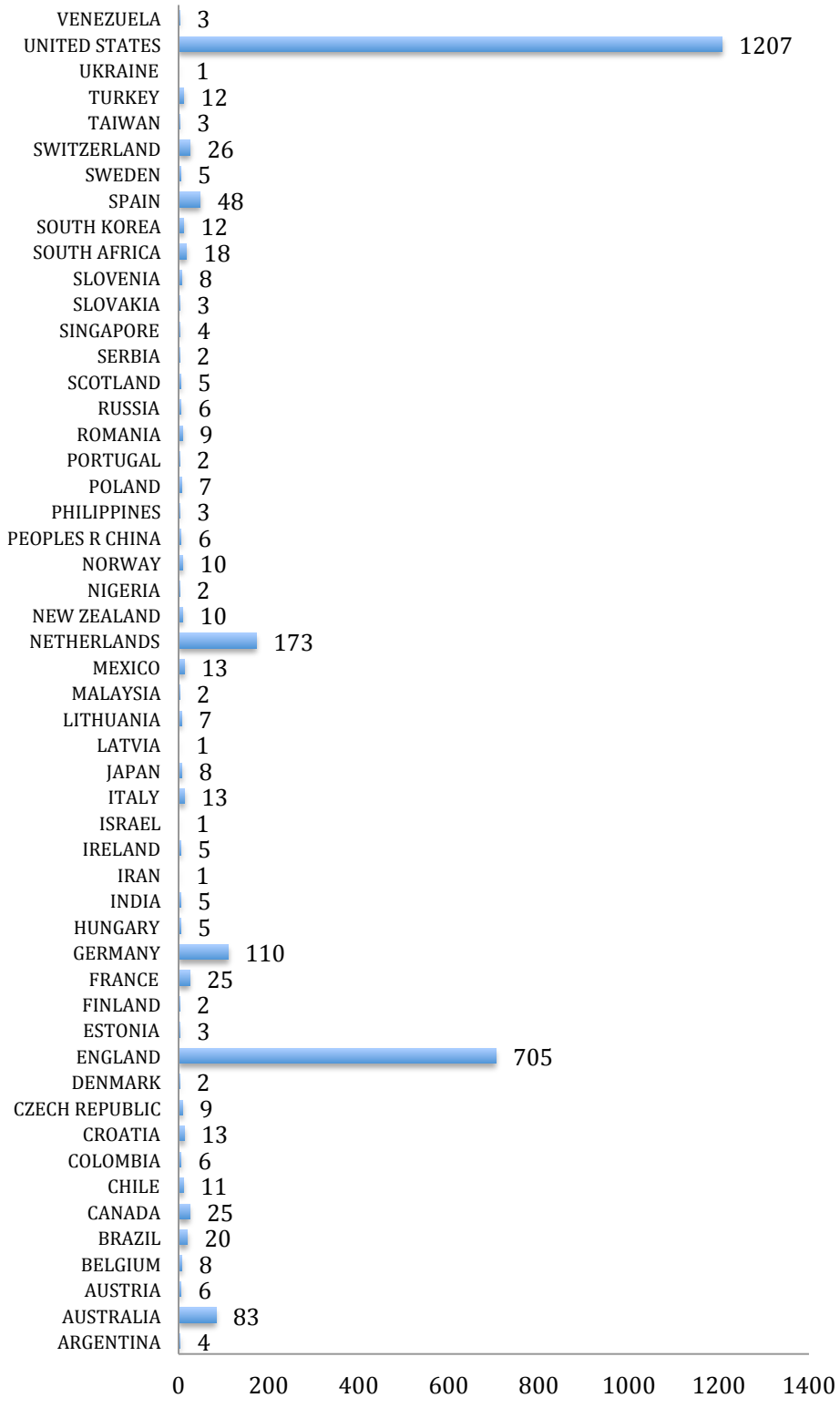

Figure 19: number of Journal of the JCR science edition by country 2010

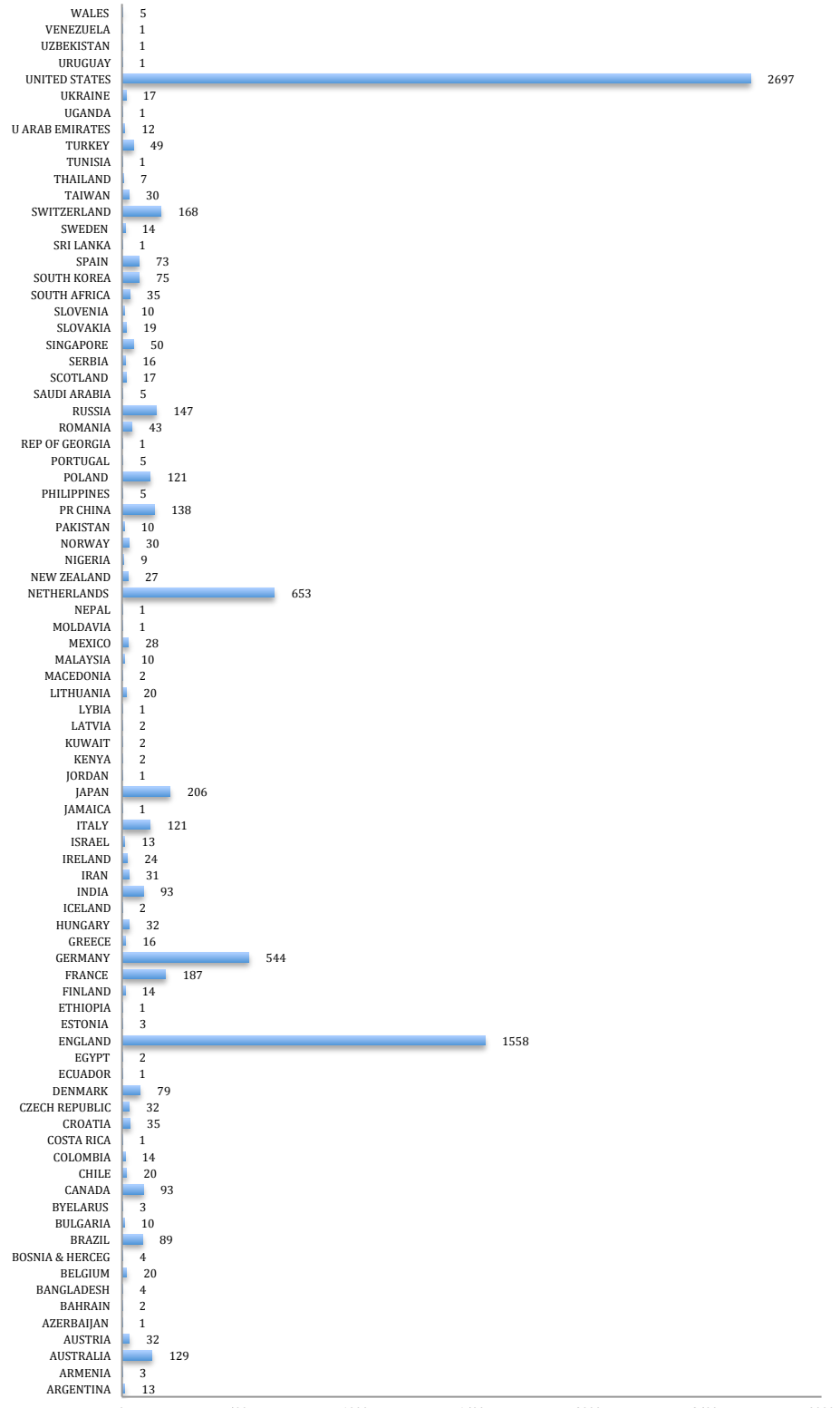

Figure 18 accounts for 8,005 journals revealing a staggering amount of inequality in the geography of the production of academic knowledge[141]. The United States and the United Kingdom publish more indexed journals than the other countries combined. The US-based journals are 2,697 (or 31.7 per cent of the total), and the United Kingdom-based journals are 1,558 (19.5 per cent). Together the publications by these two countries account for 51 per cent of the total number of the scientific journals taken into consideration by the JCR. Western Europe, in particular Germany and the Netherlands, also score relatively well. The US, the UK and the Western Europe together represent 84 per cent of the total indexed journals, while most of other countries and regions are scarcely represented.

The inequality of the academic knowledge geography that results from the Thomson Reuters database is evident taking into account the journals of selected countries in Asia: the total amount of journals indexed from China, Thailand, Taiwan, South Korea, Singapore, Philippines and Malaysia is barely 4 per cent of the total. It reaches 6.5 per cent once Japan is added. This imbalance is sharper considering the social science edition of the same JCR project. In *Figure 19,* that accounts for 2,678 journals (45 per cent), the US-based journals are 1,207 and the United Kingdom-based journals are 705 (26 per cent). Together, they account for 71 per cent of the total indexed journals of social science. Adding the journals of Western Europe the percentage reaches 94 per cent, while the indexed publications from East and South Asia are only 1.12 per cent[142].

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[141] Both the graphs are elaborated from data available from the Journal Citation Reports Science Edition 2010

[142] The same finding appeared from the maps about the location and language of academic knowledge production elaborated in the diagrams in appendix, extracted from the recent work *Geographies of the World's Knowledge* (Graham, Hale, Stephens, 2011) that visualises the

It is evident that citation analysis of Thomson Reuters is the affirmation of a particular hierarchy: through the English language it is possible to observe a precise concatenation of language-history-geography-knowledge that deals with a specific order that has its core in the Anglo-Saxon and Western regions.

The cognitive measure of academic labour grounded on data from this US-based multinational indicates a hierarchy that, passing through the grammar of language, fixes a particular knowledge production to a specific global geography. The Standard English of the SBE and GAE, related to cognitive measure, is a linguistic regime that transforms the circulation of knowledge into codified prescriptions, demarcations and exclusions producing an heterogeneous context that is differentiated and vertically hierarchised.

In the last few years in Asia some projects were established with the clear intent to counter-balance the hegemony of Standard English in academic publishing. The recent Chinese Social Science Citation Index (CSSCI) and Taiwan Social Science Citation Index (TSSCI) are two new databases established for the citation analysis in Chinese language, which aim is to relativise the power of English by making the Chinese language, the international language for scientific knowledge production in Asia. In this respect Huang and Arthur Hou-ming wrote:

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locations of academic journals and the role that language plays within the reproduction of academic knowledge in scientific journals listed in Thompson Reuters' Web of Knowledge (using data from both editions, science and social science editions, of the Journal Citation Reports from 2009).

> To deal with the problems caused by this ill-conceived design to give English language the top place under the sun, Taiwan Social Science Citation Index (TSSCI) was established as a specific remedy. (HUANG, 2009)

While other scholars wrote:

> The database of TSSCI poses Taiwan's Academia within the Chinese-speaking world, recognizing the existence and importance of the various Chinese communities. It is our blessing that we are familiar with a language that is international, that with Chinese we can participate in the process of internationalization and globalization. (CHEN, CHIEN SECHIN, HWANG, 2009)

However these projects, rather than being alternatives to cognitive measure, seem to be vectors able to implement and reinforce it. In fact, they are making Mandarin, also called 'standard Chinese', the 'alter ego' of codified English.[143] There emerges an idea of Asia that is opposed to the West and its language (BAIK, 2002), against its 'cultural imperialism' (CHEN, 2010). In this framework, some postcolonial studies have made the decolonisation discourse a slippery field: it has as a mirror effect, the Chinese language transforms Asia into an abstract entity opposed to the West (GE, 2000). The affirmation of Chinese as a counter-power to the English language describes the field of languages as such a space of vengeance and conquering, affirming a method useful only for establishing new cultural and political identities. From this point of view the Standard Chinese reflects, like a

[143] Standard Chinese, also known as Mandarin, is a codified language: its grammar is standardised and its vocabulary is drawn from the large and diverse group of Chinese dialects spoken across northern, central and southwestern China.

mirror, the same Eurocentric grammar of Standard English in knowledge production[144].

This linguistic regime of symmetries is both a prerequisite and effect, which is possible only in a context uniform and homogeneous, despite its homogeneity being artificial.

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[144] From that point of view both Chinese and English languages seem to reinforce the same logic of the 'homolingual address' described by Naoki Sakai. It is a linguistic regime that assumes 'the normalcy of reciprocal and transparent communication in a homogeneous medium' (Sakai, 1997): 'homolingual address [...] is a regime of someone relating herself or himself to others in enunciation whereby the addresser adopts the position representative of a putatively homogeneous language society and relates to the general addressees, who are also representative of an equally homogeneous language community (Sakai, 2007). Delimiting the realm of possibilities and experiences, the codification or standardisation of languages fixes the positions of speakers and their expectations, avoiding what Sakai called 'heterolingual address', which 'assumes that every utterance can fail to communicate because heterogeneity is inherent in any medium, linguistic or otherwise' (Sakai, 1997): 'what is kept out of this regime of homolingual address is the mingling and cohabitation of plural language heritage in the audience […]. The scene where one speaks without assuming that everybody among the addressees will understand what is delivered by the speaker is premeditatedly excluded (Sakai, 1997). The current data analysis provided by Thomson Reuters and based on Standard English and its symmetrical projects CCSSCI and TSSCI based on Standard Chinese, are both codes of the circulation of knowledge which, in order to measure knowledge, they have to fix the mutual recognition of speakers. It is a knowledge production that prescribes the reciprocal positions of speakers, that means that their positions must be clear, recognisable and predictable: 'In most cases of homolingual address in publication, the writer's language is also the reader's so that the writer and the readers are both presumably embraced within the putatively unitary community of a single language. […] But this is not the only type of homolingual address: there are, if not many, cases in which the writer's language is distinctively not the reader's. Here consideration of the position occupied by the translator is crucial. As long as the position of the translator is set aside and viewed to be secondary, this type of address is still homolingual in the sense that two different language communities are posited as separate from one another in the representation of translation, and that translation is understood to be a transfer of a message from one clearly circumscribed language community into another distinctively enclosed language community (Sakai, 1997). This kind of linguistic codification represents a sort of discipline of knowledge production and a relational norm that 'presupposes the reciprocal positions of both the readers and writers in the hierarchy of the same linguistic community' (De Michele, 2009).

It is within this framework that it is necessary to break those geographical and disciplinary boundaries that prevent to understand knowledge production as multiplicity. In other words, it is essential to study deepen the functioning of cognitive measure on a global scale through the lens of what Gayatri Spivak called a 'necessary impossibility' (SPIVAK, 2007): an urgent perspective able to transform opposition into a principle of multiplication (SPIVAK, 2007).

In her book *Other Asias*, Spivak writing about Asia wrote:

> Our continent is plural. Europe named it progressively. Today we are divided into at least West Asia (the Arab world), East Asia South Asia, Central Asia –and Southeast Asia unevenly divided, not only between its two directional components, but also, chiefly through the inter-nationality of Islam, with West Asia. The claim to the name is unevenly divided, yet there is a regionalist claim. We must therefore attempt to think it as one continent in its plurality, rather than reduce it only to our own regional identity. A necessary impossibility, if you like. Or a perspective available only to the imagination, though not to the understanding, which must go by way of regional identity (SPIVAK, 2007).

Starting from this suggestion it is urgent to think about practices able to change the measurement into the refusal of linear homogeneity or identity, thus affirming new degrees of possibilities inside universities.

From cognitive measure to the cognitivization of exploitation

Considering some journals more valuable than others and using Standard English as a language for arguing and debating (at the expense of other languages), employs not only normative criteria of measuring: they are dispositives that formalise and prescribe academic labour in general. This is because measuring 'is not a simply, neutral, legal rational practice: rather it is an instrument for new forms of governance and power' (SHORE, WRIGHT, 2000). The cognitive measure of academic labour refers to a kind of normative prescription, a discipline that involves desires, motivations and the same subjectivity of scholars. It is a simultaneous imposition of external control from above and, at the same time, internalisation of norms. Referring to Foucault, it is possible to understand this process as a combination of 'external subjection and internal subjectification' so that individuals conduct themselves in terms of the normative measure 'through which they are governed' (FOUCAULT, 2009). Measuring academic labour refers to discipline of research as well as to workforces' subjectivity which involves the transformation of cooperation into competition 'resulting in a loss of collegiality and new power hierarchies' (EXWORTHY, 1999).

The cognitive measure and the modalities by which it is applied, influences the researchers at least at three levels: the choices a) about the topic of research, b) the methodology utilised and c) the public audience (influencing therefore the same writing as public act).

In the universities of East Asia, where the pressure to publish in the shortlisted journals indexed in the SSCI, SCI or A&HCI is very high, the choices about topic of research is a vivid question for academic workers.

Angel Lin studying about the decision-making of scholars in the public universities of Hong Kong which, in order to increase the chances of getting their research published in SSCI journals, 'pick those topics that are hot topics to those journals' (LIN, 2009), described a sort of 'personal struggle' that scholars are living, where issues considered interesting by researchers are often abandoned or radically 'negotiated' because they 'are not a popular topic to those mainstream journals' (LIN, 2009).

The continuous negotiation between personal motivation and the reality of the global market of publication was stressed also by Chen Kuan-Hsing in observing knowledge production in Asia; according to him the choices of scholars are influenced by the fact that the most valuable journals are from the US or Western Europe (CHEN, 2009). Issues about Asia that are too specific at the geographical, historical or political level often are not take into account and are not published because they are considered excessively 'local' for a public audience that is increasingly global, transversal and heterogeneous:

> The risk, if you do not adjust your conduct and style of researching, is that the journals on which you are forced to publish simply do not publish your work, and this only because the editorial board or the anonymous reviewers who evaluate your article find your research topic not interesting. It is clear that young not tenured researchers cannot afford this refusal. (HUI PO-KEUNG, interview)

Chen Kuan-Hsing wrote that 'it is inevitable that, while local scholars are driven to present their publications in the so-called global arena, the concern for local context is either dismissed outright or given inadequate consideration' (CHEN KUAN-HSING 2009). In this framework is useful to focus

on Hong Kong, the global city par excellence plunged into fluxes of commodities and knowledge production, capital and the labour force of the Pacific. According to Cheung Siu Keung:

> Local issues and local material of study is becoming a minority because universities require publishing in specifically international journal. One thing is very clear: the issues concerning local Hong Kong will be increasingly hard to publish, and we will be forced to change our research to fit to the global academic market. (CHEUNG SIU KEUNG, interview)

Lau Kin-chi is more explicit:

> if you write on a topic about Hong Kong, then whether it is a journal in the US, in Canada or the UK, few people will be interested; for that reason there can only be a limited number of articles that these journals will be willing to publish about Hong Kong. In this sense one has to 'downplay Hong Kong' in order to get one's article published in these journals. This will create a vicious cycle, and only few people will be interested in researching Hong Kong. (LAU KIN-CHI, interview)

The cognitive measure redefines in original terms the classical dichotomy between local and global that is displaced in the field of knowledge production. At the same time, it influences also the choice about the methodology by which the research is conducted and the types of hypothesis developed by scholars. On the one hand there is a growing importance of comparative approaches[145], increasingly fashionable among

[145] The comparative approach refers to a set of methodologies aiming at explanation rather than at a more or less complete description of social or political cases comparing them across systems, through time, or cross-nationally. Usually politics and society is defined

scholars and used 'to attract as much interest as possible within a public audience increasingly heterogeneous' (HUI PO-KEUNG, interview). On the other hand, because of the hegemony of journals predominantly published in North America, many scholars adopt the analytical frameworks and attend 'the "problematiques" prevalent in the Euro-American-dominated international academic arena' (KANG, 2009). It seems that scholars in Asia are induced to draw heavily on western knowledge frameworks, theories and epistemologies in doing their research as they need to publish in foreign journals:

> Modulating the theoretical production and the research interests according to the criteria, the debate and the style of the American or Western journal is becoming common for most of scholars in Asia, in particular for those who are young and not tenured. (CHEUNG SIU KEUNG, interview)

In this framework, it is possible to describe a progressive polarisation between two kinds of knowledge: on the one hand, there is the academic knowledge codified by cognitive measure, 'less and less deep-rooted in a specific historical context, and increasingly anchored to the dimension of the global market of publishing' (HUI PO-KEUNG, interview). On the other hand, there is a knowledge that is possible to define through its social urgency and 'effective' dimension: a sort of *living knowledge* that is 'permeable to social

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both by its substance (the study of a plurality of societies or systems) and by its method (i.e. cross- and international, comparable cases, longitudinal etc. Pennings Paul, Keman Hans, Kleinnijenhuis Jan (2006) Doing Research in Political Science, London Sage Publication

urgency and singularities of the social context, and the historical specificities in which one lives' (CHEUNG SIU KEUNG, interview)[146].

The cognitive measure redefines 'the relationship between knowledge production and its socio-historical context, between research and everyday life' (HELEN GRACE, interview) further accentuated by the procedures by which papers are selected and reviewed, and that reduce the knowledge production to a restricted conversation among authors, editors, and anonymous reviewers: a dialogue that is 'not public, between anonymous people that could be last three years of long negotiations, proofreading and waiting' (LAU KIN-CHI, interview).

So, cognitive measure plays a role not only in measuring 'research outputs', it also plays a crucial role in the same process of knowledge production highly formalised, negotiated and codified. The cognitive measure fixes knowledge into a codified and standardised language: 'a foreign language for a foreign public audience' (HELEN GRACE, interview) that avoids knowledge production such as an 'event' something characterised say by balance of force and discontinuity. In the academy it seems that:

> knowledge produces simply more knowledge instead of action and collective experiences. It is a sort of knowledge that is never time urgent, always without consequences for your everyday life, on, your political and collective present. (CHEUNG SIU KEUNG, interview)

The opposition between academic and living knowledge deals with two different criteria of 'quality', which confront each other. On one side, quality

[146] The meaning of *living knowledge* recalls the Marxian notion of *living labour* (the form of the working class), in opposition to what he called *dead labor* (as capitalist wealth and machinery), as the opposition between "life" and "death" (Marx, Capital I).

means collective invention; it is synonymous with 'effective' knowledge able to take a position, which always implies different forms of political organisation where theories live in praxis. On the other one, quality refers to competition among scholars, oriented toward a 'publishing game', operating according to its examination standards as well as their perfomative rules[147].

Out of universities there emerges a new and original kind of command related to knowledge production and its economic valorisation. The cognitivisation of measure, then, is not so much a process of liberation from the exploitation based on the unit of time: rather it represents the cognitivisation of exploitation itself, showing a new sophisticated logic of control. The cognitive measure I have analysed represents the field for an emerging composition of labour and original forms of command over it.

[147] It is within this multifaceted dimension of quality that is possible to frame a new form of the Marxian notion of *alienation*: 'scholars will be alienated from their own work, much like the worker alienated from her/his own creativity in the classical Marxist model. Scholars just do the research work for its 'exchange value': just to get published in SSCI journals to exchange for money (job contract) [...]. This is a serious problem: we are being alienated from our own creative work. The impact of [...] SSCI [...] amounts to producing totally different kinds of subjectivities: scholars become alienated 'knowledge workers' for the 'exchange value' of knowledge. We are no longer masters of our own selves and agents of our own creative work' (Professor Ho, in Lin, 2009).

4.4 LINES OF FLIGHT: BETWEEN REFUSAL AND RESISTANCE. TRACES FROM HONG KONG'S UNIVERSITIES

In this multifaceted context between the production of subjectivity and the measure of labour that implies a new kind of command, hierarchies and segmentation, which lines of flight are practicable?

From interviews collected in the universities of Hong Kong two different specular strategies have emerged against the normative effects of the cognitive measure of labour. These two alternatives trace as many different, if not opposite, practices and directions.

On the one hand, it is possible to observe a sort of 'exodus' of scholars from the public universities that are UGC funded (and increasingly characterised by the evaluation of RAEs) toward the private and second-tier university of Hong Kong that represent a sort of 'outside', a place to escape and live an alternative academic life; in fact these universities are places where competition among colleagues is less intense compared to the public one, as well as the pressure to publish. This is the case of the Sue Yan University of Hong Kong (SYHKU),[148] the private university where professor Harold Traver, an American sociologist and director of the Sociology department of this university, has come to teach after having literally 'escaped' from the more famous and well-reputed Hong Kong University (HKU):

> I left the HKU because I was too tired of the 'game of research grant', and the pressure for publication, continuously forced to justify my existence. I was fed up with this mechanism that put competition in the scientific

[148] About the SYHKU, see Chapter 1 and 2.

> community, among us. The introduction of the RAE changed quite a lot the ambience of the public university, putting too much pressure, and a sort of 'lack of trust' between scholar and the management. (HAROLD TRAVER, interview)

Professor Traver left the HKU (one of the top Asian universities) where he had a respectable position, but it seems that he does not care too much. If in the public universities the working conditions are better in terms of wage and social status, nevertheless the 'human cost' one has to pay is too high: 'you are always under the gun. You have to always work enough, to produce more and more, breathing competition at any moment' (HAROLD TRAVER, interview). Of course, also at the SYHKU the academic workforce must teach, write and publish but the environment is very different:

> publishing is an important part of your job as academic, but you are free to publish into not-referee journal, without care about their impact factor. The management doesn't care too much about these elements. It is enough that you publish articles, books, piece of article. Also in the local newspaper is fine and English or Chinese language doesn't matter. They support you, and this is very important. I really like this university. Of course, this is less prestigious than the HKU where I taught, but here I can live the academic life more relaxed, establishing relations based on trust with colleagues and students as well as with the university's management. When I arrived here I created a study program in sociology: this is the best reward for me. Despite here the wage is less than that in the public universities, the ambient and people are definitely better. Yes, I ran away from the HKU and I am proud of it. (HAROLD TRAVER, interview)

Professor Cheung Siu Keung, a Hong Kong sociologist and expert on Hong Kong cultural studies, expressed the same feeling. Since a few years ago he was involved in the political movement of this city-state claiming the right to housing, while now he is deputy director of the sociology department of the SYHKU. Here the obligation of teaching in English is not strictly observed, and most of the students speak only the local dialect. A perfect place to undertake studies about Hong Kong, most of them in Cantonese:

> If the subject is national, i.e. Chinese literature, the language must be Putonghua; for hard science, language must be English; for local issue and Hong Kong cultural studies, the language is Cantonese. I really like doing research, and maybe for this reason I can't accept that people put a gun over my head. It is for this reason that I am working at the private university SYHKU. I like to work here, despite I know that my salary is much lower that others scholars who are working in the public universities. There is not so much pressure on publishing. Of course, they ask you to be productive, but if you write a book, a monograph, a survey about Hong Kong in Chinese instead of English it does not matter.
>
> I like to work here because I like to write in Cantonese for Hong Kong people. Most of them do not read English, and as a researcher I like to choose my public audience. Here I can do it without feeling myself marginalised, excluded and guilt feeling. I have nothing against English, but using English is not simply a matter of expression: it brings me in another world, it changes my readers.
>
> Because of the SYHKU is a self-funded private university, I don't need to play with the RAE game. So, first of all, I have my freedom and autonomy to do what I want to do, to write and teach in Cantonese. I am sure that I will not have the same job satisfaction in a public university, despite more prestige and monetary rewards. In Hong Kong the system of private and

> public are detached, so I use the private institutions like an escape. (CHEUNG SIU KEUNG, interview)

This working place is a sort of 'anomaly' compared to the public universities of Hong Kong. From these interviews the private universities of Hong Kong is a sort of 'outside' of cognitive measure based on scientometrics and its normative practices, individualisation and competition. The choices of scholars I have reported represent an original form of refusal[149] of academic discipline: alternative forms to the economic rewards (like the freedom of choosing language of teaching and writing as well as the possibility to establish new department and teaching courses) made this individual escape a positive and affirmative experience.

In the same city-state of Hong Kong but in a different university, I observed another process that could be understood as resistance to the cognitive measurement. At the Lingnan University some scholars have tried to define a practical experience that is radical different from above, first of all because it has tried to reverse the individualisation of this measure into the opposite.

[149]The general theory of the refusal of work proposed by operaismo was theorised first at the Mirafiori Fiat Factory in Turin during the 1960s and 1970s, as expressed by young workers from the south of Italy. The refusal of the disciplinary regime, the refusal of young women to get married and make a family, the affirmation of the sphere of non-work become features of a new set of collective practices and a new form of life within the expansion of the welfare state against the capitalistic division of the labor market. More about the Refusal of Work: What is the Meaning of Autonomy Today? Subjectivation, Social Composition, Refusal of Work by Franco Berardi (Bifo) (republicart.net/disc/realpublicspaces/berardi01_en); Nicholas Thoburn on The Refusal of Work (libcom.org/library/deleuze-marx-politics-nicholas-thoburn-5); Michael Hardt and Antonio Negri in Empire (2000).

This was the main assumption of the establishment of the cultural studies department at the public Lingnan University of Hong Kong in 2000:

> Cultural Studies is almost brand new for the academia of Hong Kong; we have chosen to establish this research field in the university challenging its disciplines and measure inventing new discipline which, as novelty, forced us to radically rethink the division of academic knowledge. (HUI PO-KEUNG, interview)

The foundation of cultural studies at Hong Kong, the transformation of these studies into a discipline was a sort of:

> dispositive of collective resistance to escape the hierarchy of the classical disciplines, journal and academic publication. The foundation of the cultural studies at the Lingnan University of Hong Kong is an act of resistance: we have set up a new discipline against disciplines. (LAU KIN-CHI, interview)

It is a cooperative experiment, a sort of 'exodus' *inside* the institutions, inside the academy to 'challenge' the measure itself; it is a collective practice that uses the institutional space 'because there is not a practicable, physical outside from university to attack and to resist with enough force' (HUI PO-KEUNG, interview). To establish the department of cultural studies was, first of all, an act of rethinking those same academic disciplines and academic knowledge production: 'our aim was to found the Hong Kong studies as dynamic model of interdisciplinary, even trandisciplinary studies in contemporary culture; we have set up a new discipline in order to problematise the policy of ranking and its discipline' (STEPHEN CHAN, interview).

From these fieldwork's materials have emerged that these scholars have explored a practice able to tackle the application of cognitive measure, transforming this latter into something ineffective establishing a sort of 'outside' *inside* the university: 'our idea was to set up a new field of research that does not have any rank, not yet' (HUI PO-KEUNG, interview). From this experience seems that while resistance is conceived as innovative and productive practice, cognitive measure is something that necessarily comes after, living ontologically *post festum*.

A significant aspect related to this process was to rethinking the dimension of the knowledge circulation; according to Stephen Chan 'this issue require us to develop new form of cross-disciplinary scholarly collaboration and academic programmes, the coordination and integration of multiple perspectives' (STEPHEN CHAN, interview). With this ambition was founded the journal *Inter-Asia Cultural Studies* also called 'movements' project: it is a 'trans-border collective undertaking to confront Inter-Asia cultural politics'[150] that has functioned to 'reclaim the authority' on measure and evaluation (HUI PO-KEUNG, interview). Moreover:

> this project was useful to not get stuck at the local level, thus unable to intervene in the processes of transformation at the global level; quite the opposite this global level must be useful to grasp aspect of local that we are living. The local dimension must see through the lens of global and vice versa, as a continuum rather than an opposition. (LAU KIN-CHI, interview)

These lines of flight, both individually and collectively, trace some directions against the new exploitation and its measure in the cognitive capitalism.

[150] Inter-Asia Cultural Studies, Volume 1, Number 1, 2000 Editorial statement.

They are showing the new balance of power within the academic knowledge production, as well as some experimental ways of organisation in social science.

Besides an individual 'exodus', this is a collective practices at the institutional level, which have the ambition of transforming the same educational institutions. However, this complex and urgent field is slippery and ambiguous: the strategies and practices that I have reported, although maybe indicate the right direction, sometime are very far away from elaborating the appropriate answers to the current exploitation.

These traces have the advantage of showing us the complex interplay between production of knowledge and subjectivity: today, while cognitive measure redefines the production of the workforce, this same field is enriched by lines of flight and original production of subjectivity. It is inside this complex terrain of forces that one must understand the transformations of higher education and the academic labour today: while university is the laboratory for cognitive measurement, at the same time it could be the place for new form of social autonomy and independence.

CONCLUSION

This research studied the transformations that are changing the shape of tertiary education, its institutions and the geography of knowledge production as well as the relationship between education and the labour market. The research has sought to show, in their heterogeneity, the different and intense aspects of this phenomenon in Asia.

In Chapters 1 and 2, I described the progressive commodification of higher education through the new wave of massification, that is, an expansion driven by market forces. However, according to authors such as CARLO VERCELLONE (2006), ENZO RULLANI (2004), MICHAEL HARDT and ANTONIO NEGRI (2009) and Y. M. BOUTANG (2002), education and knowledge exceed the 'objective' criteria of exchange in the classical economic theory of value because they are by no means scarce resources. Quite the opposite, they are abundant and not consumed through use, but enrich themselves through being shared and diffused within society. Enzo Rullani, writing on the notion of a 'new education' for the knowledge-based economy, claimed that knowledge possesses a 'multiplicative power' based on 'sharing', that 'widening the pool of use and re-use of what one knows is able to reduce redundancies'. According to this author:

> Knowledge can be shared without any cost because it is not consumed by its use […] In fact this is the only resource that can be multiplied through

> sharing. The more you share, the more [knowledge] becomes abundant. (RULLANI, 2004)[151]

In the same vein Hardt and Negri define knowledge and its production through the category of common:

> we consider the common also and more significantly those results of social production that are necessary for social interaction and further production, such as knowledges, languages, codes, information, affects, and so forth. (NEGRI, HARDT, 2009)

The authors of *Commonwealth* affirm that 'this form of the common does not lend itself to a logic of scarcity', and for explaining this singularity they refer back to Thomas Jefferson's famous remark: 'he who receives an idea from me, receives instruction himself without lessening mine; as he who lights his taper at mine, receives light without darkening me' (Jefferson in HARDT, NEGRI, 2009).

From this research it has emerged that in Asia the current policies of access to education express the persistence of the principle of scarcity: the rising of fees, the increase of self-financed courses and the growing number of fee-paying students reveal a general intensification of the costs related to studying. Education becomes a commodity, and the expansion of the educational system is profit-oriented within the valorisation of capital.

This process of commodification related to the expansion of education involves first of all a sort of hybridisation between education inshore and

[151] Translation mine. Here the original Italian: *la conoscenza può essere codivisa senza costo perché non si consuma con l`uso [...] Essa infatti é l`unica risorsa che può essere moltiplicata attraverso la condivisione'. Più viene condivisa, più diviene abbondante.*

offshore, for profit and non-for profit sectors as well as between public and private providers. The hendiadys of 'expansion and differentiation' transformed the relation between public and private into something extremely ambiguous, indeed fluid, while a continuum of gradations is replacing the sharp distinctions among them. The introduction of self-financed courses in the public university of Hong Kong as well as the overlap between public university and private colleges in China unfold an articulated interaction between the public and private sector, a complex interdependence that comes with a proliferation of educational hybrid institutions.

The public universities of China and Hong Kong are more and more oriented toward commercial activities: despite still being public, they have started programs, curricula and policies that transform universities into actors looking for profits. This is the result of an interweaving of private colleges and public universities in China as well as of the introduction of the associate degree in Hong Kong: in both cases the reduction of public resources has forced universities towards a pro-business orientation despite their status as public institutions, eroding the classical liberal distinction between private and public as it was previously based on funding systems.

The emergence of original assemblages of universities that are no longer strictly public or private in classical terms opens up a new space for the management of knowledge production.

The valorisation of knowledge transforms education into a commodity that is quite specific and particular: a positional good that is hierarchical in character (by definition some are more valuable than others).

So, economic valorisation transforms education into something that is not simply scarce: it is not just 'scarce', like all economic commodities, but scarce

in *relative* terms. From an abundant good to a commodity that is 'relatively scarce': this was made possible by stressing the relative value of knowledge associated to its relative position occupied in a hierarchical order. In other words, hierarchy makes the commodification of education possible, while the same valorisation of knowledge is realised through processes of stratification that consider value not in absolute terms, but as something higher or lower compared to another, that is to say, relative. It is through this relationship that it is possible to apply the status of a commodity to knowledge.

In addition to patents, copyrights and the pervasive hegemony of intellectual property, the classical tools that turn knowledge into a scarce resource, it is necessary to see hierarchy as a tool of this 'new' political economy of knowledge: with this notion I referred to the particular mechanism in contemporary capitalist production that reproduces the classical law of value in a regime based on abundance instead of scarcity. The 'new' political economy of knowledge is a strategy to create an artificial scarcity of knowledge by means of hierarchies:

> The value of knowledge is not the result of its (natural) scarcity, but only of the limits established to accessing it[…] The scarcity of knowledge, what gives its value, is therefore artificial in nature, and comes from the ability of this or that power to temporarily limit its diffusion and regulate its access. (RULLANI, 2001)[152]

[152] Translation mine. Here the original Italian: *Il valore della conoscenza non è frutto della sua scarsità (naturale) ma unicamente delle limitazioni stabilite, istituzionalmente o di fatto, all`accesso [...] La scarsità della conoscenza, ciò che le da valore, è dunque di natura artificiale, e deriva dalla capacità di questo o quell potere di limitarne temporaneamente la diffusione e di regolarne gli accessi.*

While stratification and segmentation introduce the 'logic of scarcity' at the ground level of the new political economy of knowledge, it is possible to associate a 'positional rent' to the positional good of a university degree, that changes according to the position of institutions within the vertical hierarchy of the educational system: 'the higher education industry provides positional goods (scarce by definition, such as both elite universities and diplomas), and students compete to obtain such goods as they provide a positional rent' (TAVOLETTI, 2009)[153].

On the basis of the findings of this research one might say that spatial geography and language are additional factors that differentiate and influence this kind of rent in the post-colonial geography of knowledge production.

The language of the medium of instruction (MOI) and the geographical position of the university where one has studied, reflect a geopolitical hierarchical position. In Chapter Three I noted that student and workforce mobility, as well as knowledge production at the global level, are grounded on a post-colonial geography that reflects historical and social imbalances.

The attractiveness of the English language rather than Western education itself reveals a global order composed by old and new hierarchies. This goes through knowledge and its production: knowledge production, geographically embedded, strengthens and multiplies the historical

[153] In certain respects the idea of 'positional rent' recalls what David Ricardo and Karl Marx wrote concerning the issue of 'differential rent': these classical authors, studying the rent of land, theorised that different lands could have different returns. According to Marx of the Capital, Volume 1: 'differential rent was determined by the difference between the yield from the capital invested in the worst, rentless soil and that from the capital invested in superior soil'. (Marx, 2006). Moreover: 'the two general causes of these unequal results [of differential rent] – quite independent of capital – are: 1) fertility [...] and 2) the location of the land, this latter is a decisive factor in the case of colonies'. (Marx, 2006)

differences of the asymmetries of the post-colonial order. In the 'new' political economy of knowledge the processes of the capitalistic valorisation of education are increasingly dependent on extra-economic factors, while the social and historical aspects are the condition of possibility for the same capitalistic valorisation.

This research has also explored the issue of stratification and hierarchies in higher education, and the progressive differentiation of educational institutions at the regional, national and global level. Reading the new massification of higher education through the lens of hierarchy, it revealed the vertical lines that compose the educational system. The centrality of nominal variables that account for the heterogeneity of the education on offer and of the quality of degrees (Chapter 1), the importance of relational assets and of the relative value of the quality of the university, education and knowledge in general, to the detriment of their absolute value (Chapter 2), are key aspects of the global university and the proliferation of hierarchies as a means of its functioning. The progressive internationalisation of higher education parallel to its valorisation is based on a multiplication of internal and external boundaries, when differences both at the micro and macro level are organised, managed and defined as asymmetries and inequalities by capitalistic command. So, it was possible to distinguish between top and second-tier universities, between different degrees of prestige, status and 'quality' of knowledge. In this framework the global ranking of the university refers to a sort of disciplinary technique influencing the 'architectural shape' of the educational system, organising it through the spatially distributed differences of its elements. According to Foucault,

discipline always involves a heterogeneous environment, it is a particular way:

> of managing and organizing a multiplicity, of fixing its points of implantation, its lateral or horizontal, vertical and pyramidal trajectories, its hierarchy, and so on. The individual is much more a particular way of dividing up the multiplicity for discipline than the raw material from which it is constructed. Discipline is a mode of individualization of multiplicities rather than something that constructs an edifice of multiple elements on the basis of individuals who are worked on as, first of all, individuals. So [...] discipline can only be concerned with multiplicities. (FOUCAULT, 2009)

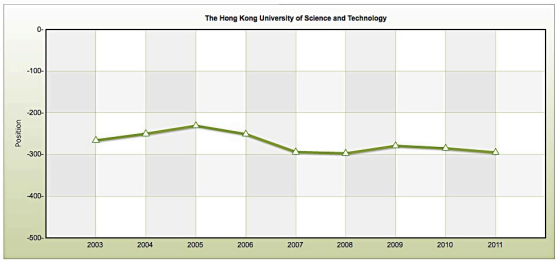
From this point of view global ranking can be considered as a sort of 'disciplinary management of multiplicities in space', that is to say '[the] constitution of an empty, closed space within which artificial multiplicities are to be constructed and organized according to the triple principle of hierarchy, precise communication of relations of power, and functional effects specific to this distribution' (FOUCAULT, 2009).

However, such stratification and hierarchies seem to be fairly flexible and plastic, like a continuous relation never given once and for all. In fact, the order in which the heterogeneous space of knowledge production is defined, the relationship between its constituent elements as well as the divisions and the asymmetries of the educational system are quite mobile and flexible, based on the variable results of citation analysis and scientometrics. The rankings are continually updated: new versions are released every year to observe the shifting positions of each university, their performance

improvement or decline; comparisons are made and historical trends analysed[154].

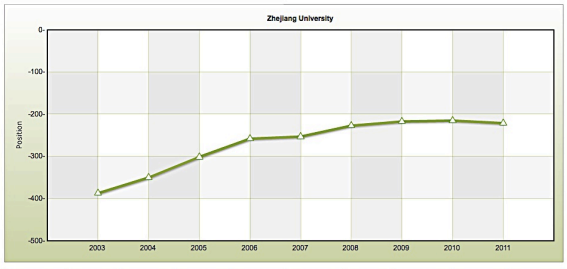
It emerges that hierarchy in the educational system is flexible in nature and totally transformable precisely because it is based on results that change continuously. At the same time, there are also rigid segmentations, which shape the hierarchy of global knowledge production: in this thesis I tried to demonstrate that the hierarchical process of higher education is intertwined with the historical and political aspects of post-colonial temporality (Chapter 3). The English language as MOI to lure Asian students into Hong Kong's

[154]The two images below extracted from the website of Academic Ranking of World Universities (AWUR) are an example of this claim; *Figures 25* and *26* represent respectively the performance of the Science and Technology University of Hong Kong (HKUST) and the Chinese University Zhejiang from 2003 to 2011:



ARWU	2003	2004	2005	2006	2007	2008	2009	2010	2011
Institutional Ranking	201-300	202-301	203-300	201-300	203-304	201-302	201-302	201-300	201-300

Figure 25: the performance of the Science and Technology University of Hong Kong (HKUST) from 2003 to 2011



ARWU	2003	2004	2005	2006	2007	2008	2009	2010	2011
Institutional Ranking	301-400	302-403	301-400	201-300	203-304	201-302	201-302	201-300	201-300

Figure 26: the performance of the Chinese University Zhejiang from 2003 to 2011
www.shanghairanking.com (last access July 22, 2011)

universities and the Western educational background of their academic workforce denotes an original displacement of the classical dependency between West and East, between the historical centrality of the Anglo Saxon world and the economic growth of East Asia. The Regional Hub of Education (RHE) has shown that these historical, social and political asymmetries attributable to the colonial period persist in new forms and dimensions, displaced and multiplied by growing intra-Asian mobility. The international dimension of the global university is intertwined in rigid contrapositions that characterise the hierarchies of knowledge production. The same rigidity emerged when studying academic publishing based on databases provided by Thomson Reuters, largely overbalanced in favour of the Anglo Saxon countries and favouring the codified 'Standard British English' (SBE) and 'General American English' (GAE). This formal code through which knowledge circulates, is reproduced and measured globally reflects the dichotomy of the West/the Rest of Stuart Hall (HALL, 1996) where knowledge production fixes positioning and hierarchies that are not only linguistic but also geopolitical, historical and political: the asymmetry of history and of the post-colonial present are reflected in the production of knowledge. Cognitive measure and knowledge codification, as well as the transnational dimension of education, maintain an order that passes through the relation of centre/periphery, displacing and multiplying it. Within this intensity the segmentation processes become rigid and inflexible, working in a *'binary* fashion, following the great major dualist oppositions' (DELEUZE, GUATTARI, 1987).

Summarising what emerged in this research, it is possible to outline a particular 'global regime of higher education', that is to say, an articulation of forces and contradictions, asymmetries and differential positions

constituted by the coexistence of segmentations that are both flexible and rigid: the first are multiple and flexible, the latter are rigid and dichotomous[155]. The first are based on scientometrics and data analysis; the second, on the contrary, have a social, historical and political basis[156].

However these rigid segmentations do not only coexist, but transform themselves into one another, cross over into one another[157].

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[155] Another element that informs knowledge production at the global level in this complex interplay between flexible hierarchies and rigid segmentations, is the competition in which rankings are a symptom and also an accelerator. The analysis about the university ranking and the performance of universities describes knowledge production through the expressions 'decline', 'domination', 'threat', 'revenge' rather than 'challenge' (Baty, 2009). This is because the rankings have accelerated the national and international competition between institutions: 'rankings are an inevitable outcome and metaphor for the intensification of global competition, around which, higher education [...] has become the fulcrum around which geo-political battles for a greater share of the global market are being fought […] What started as an academic exercise became a commercial 'information' service for students and the progenitor of a 'reputation race' with geo-political implications today'. (Hazelkorn, 2011) The expressions 'battle for excellence' (Hazelkorn, 2007), 'positional arms race' (Winston, 2000), 'reputation race' (Hazelkorn, 2011) by which the knowledge production is described at the global level, reveals an educational system highly hierarchised but flexible, constituted by 'localized spaces' where disciplinary techniques and the flexibility of data analysis are intertwined.

[156] This kind of description reprises, to a certain extent, the distinction between 'rigid' and 'supple' segmentarity by Deleuze and Guattari: 'rigid segmentarity stands on its own and is governed by great machines of direct binarization, whereas in the other mode, binarities result from multiplicities of n dimensions'. (Deleuze, Guattari, 1987) Moreover 'supple segmentation segments of which are like quanta of deterritorialization […]: is only a kind of compromise operating by relative deterritorializations and permitting reterritorializations that cause blockages and reversions to the rigid line'. (Deleuze, Guattari, 1987)

[157] As affirmed by Deleuze and Guattari: 'It is not enough to oppose two kinds of segmentarity, one supple and the other [...] rigidified. There is indeed a distinction between the two, but they are inseparable, they overlap, they are entangled' (Deleuze, Guattari, 1987). Taking into account once again these two philosophers, it is possible to affirm that the global production of knowledge is: 'thus plied by both segmentarities simultaneously: one molar, the other molecular. If they are distinct, it is because they do not have the same terms or the same relations or the same nature or even the same type of multiplicity. If they are

Moreover, in the global university, another combination of different elements that are not mutually exclusive but deeply connected to one another, is the basis of the measure of living labour in cognitive capitalism.

Knowledge production in an academic context is characterised by a new apparatus for measuring the value (of commodities) less and less based on the units of 'time' and increasingly tied to scientometrics. This process started in the mid-60s, and since then the proprietary databases SCI, SSCI and A&HCI of Thomson Reuters, as well as the algorithm Impact Factor of the Journal Citation Report project (JCR), have emerged as the new unit of measure.

Since 2004, this field has been further diversified and enriched with the entrance of new actors such as Scopus, Google Scholar and Elsevier. The presence of these corporations is increasingly important in the academia, organising the circulation of knowledge, its access and measure. In particular, as I showed in Chapter Four, the command on the academic workforce is increasingly based on data analysis provided by Thomson Reuters: layoffs, hiring, wage levels and university funding depend upon the results of research output and the performance of scholars measured by these corporations.

When capitalistic production becomes more and more cognitive and characterised by the hegemony of living labour, its measure becomes cognitive, a sort of prescription and formalisation of the productive activities as a condition of its measurability.

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inseparable, it is because they coexist and cross over into each other'. (Deleuze, Guattari, 1987)

The measure analysed in this research could be represented using the figure of the ellipse: a geometrical curve (c) in which the sum of the distances of any point (P) from the two foci (F1 and F2) is a constant quantity.

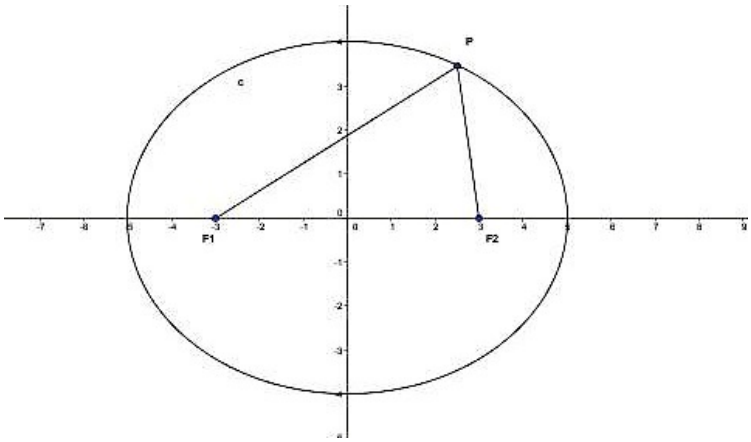

Figure 24: the geometrical figure of the ellipse

I am using this metaphor to describe two kinds of techniques, different to each other, which occupy the two foci of the ellipse (F1, F2) and are exerted on the academic workforce in any point (P) of the ellipse.

The first focus F1 represents the classical disciplinary techniques exerted on the academic workforce, orienting times, decisions and their priorities which have in the assessment of the 'research output', 'academic quality' and 'scholars performance' their most important tool. As I have observed in this research, academic labour is facing a continuous evaluation (like RAEs at Hong Kong's universities) that measures its 'quality', 'performance' and its 'productivity' through which the same universities' funds and research budgets are managed. According to Stefano Catucci, the procedure of examination 'is the form of the control that characterises the disciplinary dispositive. The exam classifies individuals, evaluates, rewards and

punishes them'[158] (CATUCCI, 2000). This disciplinary technique involves relations of reciprocity and asymmetry, while the workforce is an 'object of information, never a subject in communication' (FOUCAULT, 1979)[159].

The second focus F2 is occupied by data analysis, 'information processing' and 'data processing systems'[160] of a database (LYON, 1994) that like the scientometrics and the citation analysis are techniques of control of the academic workforce echoing what Gill Deleuze described in his *Postscript on the society of control*[161] (DELEUZE, 1994).

Thinking about the databases SCI, SSCI and A&HCI of the citation analysis provided by Thomson Reuters: they are the 'numerical language of analysis (control)' and 'codes that mark access to information' of cognitive measure and the governance of living labour, transforming the workforce into 'samples, data, markets, *"banks" or "dividuals"'* (DELEUZE, 1994). A dividual is a 'physically embodied human subject that is endlessly divisible and reducible to data representations via the modern technologies of control, like computer-based systems' (WILLIAMS, 2006): in this way the academic labour

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[158] Translation mine. Here the original Italian: *La procedura dell`esame é la forma di controllo che caratterizza tutti i dispositivi disciplinari. L`esame classifica gli individui, li valuta, li premia e li punisce.*

[159] The continuous evaluation of academic labour related to the academic reward system that I represented in the focus F1 of the ellipse has been compared to the Foucault's panopticon prison by many authors (O'Meara, 2011; Shore, Wright, 2000); in this comparison, the prisoner (or faculty member) is threatened by constant observation: 'while the gaze is intermittent, the prisoner (or faculty member) never knows if he/she is being watched, and this causes him/her to regulate their behavior' (O'Meara, 2011).

[160] 'Data analysis', 'information processing' and 'data processing systems' are features of our present from different sectors: from the medical field (thinking about the codification of the DNA) to the financial markets, just to mention two among others. The field of education is another new field.

[161] Scientometrics is another dispositive of the control society in addition to the 'dataveillance' (the collection, organisation and storage of information about persons) and 'biometrics' (the use of the body as a measure of identity) defined by Bart Simon (2005).

of such dividuals 'is constantly "modulating", responding 'to differing expectations for productivity' (BEST, 2010).

The academic labour in the production of academic knowledge is processed, codified and evaluated through forms of data: this is a process that transforms knowledge into a quantifiable and manageable substance. The value of 'academic knowledge', the 'quality' of institutions and scholars and the same employment relations, career advancement and redundancies of the workforce are based on citation analysis. Scientometrics transforms scholars into both 'users' and 'data subjects' that are collected, stored, matched, retrieved, processed, marketed and circulated using databases belonging to big corporations like Thomas Reuters, Scopus or Elsevier.

So, in the global university there are two technologies that are established on top of one another, and that are interwoven: the first could be called discipline and the second represents the techniques of control. They are not mutually exclusive, quite the opposite they are deeply connected to one another.

In a certain sense 'citation analysis' and bibliometrics are the *diagram* of the disciplinary power wielded within the global university[162].

[162] I refer here to the concept of diagram developed by Felix Guattari, who in turn borrows this term from Charles Sanders Peirce: 'Peirce identifies three types of icon: image, metaphor, and diagram. For him, the icon operates through a relation of resemblance between the sign and its referent. Guattari would agree that the image and the metaphor signify through resemblance, which is to say representation, but his version of the diagram functions differently because as he defines it, the diagram does not signify; it is 'a-signifying' (Watson, 2009). According to Janell Watson, examples of the diagram at work include the algorithms of logic, algebra and topology, as well as processes of recording, data storage and computer processing. This kind of 'a-signifying' semiotics 'is used in information technology, science and the arts, transmitting ideas, functions, or intensities with no need to signify any meaning. Examples include mathematics, computer code, musical notation, and economic transactions' (Watson, 2009).

I demonstrate that in the global university the discipline of academic labour passes through the cognitive measure of knowledge production, that is a quantitative measure without reference to any of its contents or social properties: a sort of *a-signifying discipline* of the living labour within the global university and knowledge production at the global level.

The elliptical shape is a metaphor of something that is not merely reducible either to a purely disciplinary technique, or to one of control: instead it is something that, combining together these two techniques of power, transforms them into something radically new, an original assemblage of forces and power relationships of current capitalistic valorisation.

The global university that emerges from this research is less and less identifiable as an institution of education that coincides with the perimeter of the campus or the nation state; it refers to something that is more than *just* a university. I would say that the global university is, above all, an *inclusive process* that makes academic knowledge production something heterogeneous, complex and composite – characterised by different actors, private and public, institutional and non-institutional. The global university is a point of discontinuity with academic institutions both of the past and present; it is a point of multiplicity in the midst of the transformation of educational policies and knowledge taken as whole.

From what has been observed in this research it is possible to identify the participation of new emerging actors in academic knowledge production: new players, which correspond to a different logic at the national, regional

and global levels, are assembled in a linear manner at times, and at other times can be seen to produce frictions, conflicts and contradictions.

The academic knowledge production of the global university could be represented like a sort of 'ecosystem' where university institutions, private corporations and multinationals, transnational institutions and national agencies are intertwined in a new and original relation. Today, it is not possible to analyse the transformation of higher education without entering this kind of systemic dimension where the resulting knowledge production passes, crosses and exceeds the boundaries of national sovereignty.

The global university is a multifaceted network that is internally not homogeneous: quite the opposite, it is characterised by heterogeneous subjects, with positions, forces and different roles that are mutually interdependent; it is possible to observe different drivers to which correspond distinctive players and actions that meet, clash and are assembled to shape current knowledge production.

This ecosystem of knowledge is a composite weaving between relational resources, cognitive resources (access to data, citation analysis and scientometrics, information from global ranking and branding) and cooperative networks (between different institutions, corporate agencies, public and private subjects)[163].

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[163] In a certain sense, the notion of *ecosystem* that I present is similar to what Michel Foucault described with the notion of *milieu:* it 'is what is needed to account for action at a distance of one body on another. It is therefore the medium of an action and the element in which it circulates' (Foucault, 2009).

Foucault reprised this concept from the studies of George Canguilhem about the biologist Jean-Baptiste Monet de Lamarck and the physicist Isaac Newton: 'Considered historically, the notion and word milieu were imported into biology from mechanics in the second half of the eighteenth century. The mechanical notion, but not the word, appears with Isaac Newton, and the word, with its mechanical meaning, is present in D'Alembert's and

The global university is featured by continuous overlapping and differentiations, assemblages and combinations, influences in the distance and effects that deal with an 'ecology' of knowledge production deployed in a diffuse environment instead of within the narrow boundaries of educational institutions. Within this reciprocal interaction of different players at the national, regional and global level, the 'ivory tower' is transformed from an isolated place to an articulated and complex system.

This research demonstrated that the university was only an element, important but no longer isolated, of contemporary academic knowledge production. Studying this transformation I have found a constellation, an archipelago of different actors, technologies and dispositives that reveal the current multidimensional production of knowledge.

Diderot's Encyclopedia. [...] The French mechanists called milieu what Newton understood by fluid, the type, if not the archetype, of which in Newton's physics is the ether' (Canguilhem, in Foucault, 2009). According to Canguilhem 'the problem to be solved for mechanics in Newton's time was that of the action at a distance of distinct physical individuals'. So, in physics, the concept of *milieu* was utilised to analyse the interference of a subject over another one, their reciprocal actions, effects and implications. At the same time, in biology this concept underlines the intricate matrix of forces that characterise each component of the milieu to designate the set of actions extended on a living being from outside, called *influential circumstance* by Lamark.

APPENDIX

INTRODUCTION

A.1 LIST OF INTERVIEWS

HONG KONG

ANGEL LIN	City University of Hong Kong (HKCU)	17 October 2009
ANTONY FUNG	Chinese University of Hong Kong (CHKU)	19 October 2009
CHEUNG SIU KEUNG	Shue Yan University	23 October 2009
GEOFFREY CROTHALL	China Labour Bulletin	23 June 2010
HAROLD TRAVER	Shue Yan University	3 November 2009
HELEN GRACE	Chinese University of Hong Kong (CHKU)	5 November 2009
HUI PO-KEUNG	Lingnan University	29 October 2009
KA HO MOK	University of Hong Kong (HKU)	9 November 2009
LAU KIN-CHI	Lingnan University	13 October 2009
OIWAN LAM	Lingnan University	7 October 2009

RUI YANG	University of Hong Kong (HKU)	11 November 2009
SIMONE MARINI	Hong Kong University of Science and Technology (HKUST)	16 November 2009
STEPHEN CHAN	Lingnan University	20 October 2009

XIAMEN

HING AI YUN	Xiamen University	20 November 2009
WANG LIN	Xiamen University	22 November 2009

SHANGHAI

LAI DOO	Academic World university Ranking (AWUR)	25 January 2010
JON SOLOMON	Jiao Tong University	17 January 2010
LEI QILI	Jiao Tong university	15 January 2010
WANG XIAOMING	Shanghai University	28 January 2010

SHENZHEN

KAIMING LIU	Ong ICO	3 July 2010

BEIJING

WEIPING YUE	Thomson Reuters	24 July 2010

NINGBO

CRISTOPHER O' BRIEN	University of Nottingham Ningbo	20 January 2010
SIGFRIED K. YEABOAH	University of Nottingham Ningbo	19 January 2010

SINGAPORE

C. J. W.-L. WEE	NUS	25 January 2010
CHUA BENG-HUAT	NUS	9 February 2010
HOWARD HUNTER	NMU	10 February 2010
INGRID MARIA HOOFD	NUS	29 January 2010
LILLY KONG	NUS	11 February 2010
MARK GARLINGHOUSE	Thomson Reuters	18 February 2010
RYAN BISHOP	NUS	28 January 2010

A.2 FOUR SCHEMA OF INTERVIEWS USED IN THIS RESEARCH

A.2.1: Schema used for scholars of Hong Kong's universities

General data

- name
- educational background (PHD, Master, Degree)
- professional career up to today
- university where you are teaching
- discipline and level (graduate, postgraduate) of teaching
- international experiences
- language of teaching

Question about university and HK

- HK is usually described as an international Hub of finance, and now of Education. What does 'Regional Hub of Education' mean for you? Is the term 'hub' suitable for HK?
- What is the relation between global and local in this RHE?
- What is your perception about the role and positions of the HK universities, and in particular your university, in the regional and global market of education and work? (with China? With other Asian countries, with the West).
- What is the role of the university in the urban economy of HK? What about your university?
- What is the role that HK plays in the Pearl River Delta Region?

The market of higher education in HK

- Could you tell me about the distinction between first degree and associate degree?
- What are the differences between public and the private universities?
- Could you explain to me the process of access to the public university in HK?
- What is the ratio between local students and international students in your university?
- What is the differentiation of degree in the market of labour of HK?
- What do you think is the value of a degree from a public universities, and particular from your university?

About your university, and internationalisation processes

- What do you think is the motivation for universities to become more internationalised? What

is the core of this idea?

- How is the relation between global and local reconfigured in the internationalisation process?
- How is globalisation affecting your discipline? And your topic of research?
- Do you think that internationalisation has changed the classical border between disciplines?
- What are the contradictions, or frictions, of this process of internationalisation?

About students

- What is the international student composition? Where do students came from? What they are studying? Which program?
- What kind of international students are looking for the HK universities?
- What kind of social classes do HK international students represent?
- What about economic aid and resources for local and international students?
- Are the international student's fluxes changed recently? What do you think about trends in the near future?
- What are the criteria used to select the international students in your university? What is the relationship between local and international students?
- How are the international students admitted?
- What is the relation between the international student and the market of labour of HK?
- Why do you think the students chose to come to HK to study?
- Do you know if your students are working? Which kinds of job? (during their study and after)
- What are the difficulties to teaching in a university with international students?

About teachers

- What is the composition of the teachers, staff and scholars?
- Where do they come from? Do you have any international colleagues?
- What is their curriculum? Is there anything in common among them? Are they sharing common international experiences?
- What is the motivation to choose HK and your university to work?
- Do you know what kind of employment relationship is most common in your university? Do you know if there are tenures or casualisation in the staff composition? (Lifebelt model)

About assessment and evaluation

- Several academic workers in HK described to me a sort of a new managerialism in the university's evaluation of academic performance and scholars' productivity. Could you tell me about it? What is your experience?
- Could you tell me if there are practices of evaluation and ranking in your university?
- What do you think about the global ranking index?
- Do you know if there are incentives to publish articles and book? Is it compulsory in your department and university?
- In which kinds of journal is it suggested that you publish? How does the selection mechanism work?

- What about the research issues published by these journals?
- What effect do they have on your work? On your idea of professionalism? On your behaviour? On your 'time management' and priorities?
- Are there links, bonds or ties between publication success and the possibility of obtaining funds for your research? In relation to your professional career?
- What does the word 'competition' mean for you?
- What does the word 'productivity' mean for you?

About language

- Are you teaching in English? What is the language policy of your university? Could you tell me about the use of language in your university?
- What is the link between the university and the national sovereignty in a place like HK?
- What is the function of English in HK Universities?

A.2.2: Schema of interview used for scholars of Chinese Universities

General data

- name
- educational background (PHD, Master, Degree)
- professional career up to today
- university where you are teaching
- discipline and level (graduate, postgraduate) of teaching
- international experiences
- language of teaching

Question about university and China

- Could you tell me about the HE transformation of China?
- What is the specificity of the HE transformation in China? What is the trend of its transformation? The frictions and the consequences?
- What is your personal perception of this changes, and in particular in your university?
- What is the role of China in globalisation?
- What is the role of the university in economic growth?

The marketisation of HE

- Could you tell me more about the process of privatisation of higher education? What are the differences between public and private universities?
- Could you explain the process of access to the public university?

- What is the proportion of local students and international students in your university?
- What is the differentiation of degree between top and second-tier universities for the Chinese market of labour?
- What do you think about the increasing unemployment of neo-graduates in China?
- What do you think is the value of a degree from Chinese public and universities, and particular from your university?

About your university, and the internationalisation process

- What do you think is the motivation for a university to become more internationalised? What is the core of this idea?
- How is the relation between global and local reconfigured in the internationalisation process? What is at the role of the national state?
- How is globalisation affecting your discipline? Your topic of research?
- Do you think that internationalisation has changed the classical boundaries between disciplines?
- What are the contradictions, or the frictions, of this process of internationalisation?

About students

- What is the student composition? Where do students came from? What they are studying?
- Has the student's fluxes recently changed? What do you think about the trend in the near future?
- What do you think is the reason behind the student's choice to come to China for study? And to leave this country for studying?
- After Tiananmen, how has student life and life in general of Chinese universities changed? Moreover after this historical event, how has the role of intellectual changed?

About teachers

- What is the composition of the teachers, staff and scholars of your university?
- Where do came from?
- What is their curriculum? There is something in common among them? Are they sharing common international experiences?
- Do you know which kind of employment relationship is common in your university? How is the wage defined? The career?
- Do you know if there are tenured or casualization in the staff composition? (Lifebelt model)

About assessment and evaluation

- What is your experience with the academic performance and the publishing policies of your university? Could you tell me about your experience?
- Could you describe if there are practices of evaluation and ranking in your university?
- What do you think about the global ranking hierarchy?

- What about incentives to publish articles and book? Is it compulsory in your department and university?
- In which kind of journal is it suggested to publish? How the selection mechanism work?
- What about the research issues published by these journals?
- Which effect do they have on your work? On your idea of professionalism? On your behaviour? On your 'time management' and priority?
- Is there some link, bond or tie between the publication and the possibility to obtain funds for your research? About your professional career?
- What does 'competition' mean for you?
- What does the word 'productivity' mean for you?

About the language

- Are you teaching in English? What is the language policy of your university? Could you tell me about the use of language in your university?
- What is the function of English and Chinese in the Chinese universities?

A.2.3 Schema of interview used for employee of Science Thomson Reuters

General introduction

- Could you tell me a brief history of the Thomson Reuter Company in Asia?
- Could you describe to me the service provided by Thomson Reuter?
- What do you think is the role of TR in the globalisation of knowledge production?

The measuring

- What are the features of measuring knowledge and research in Asia?
- What are the differences between this region and US or Europe?
- What is the difference of measuring between academic disciplines? Are there differences between social science and hard science?
- Different ways of measuring knowledge: the question of multiplicity and the standard.
- What does 'Quality' mean? How does one go about measuring it? What is the relation between quality and competition?
- What do you think about the issue of hierarchies in knowledge production? What about the issue of reputation? How to build and manage it?
- What do you think about the boom of scientific Chinese knowledge publications?
- What do you think about the English language as a language for measuring academic

performance? What about the Chinese?

The ecosystem of knowledge

- Who are your clients? What do they ask from you? Moreover: what kind of relationship is there between the TR and its clients?
- What is the relationship between the TR and the research center of AWUR of Shanghai?
- What it the relationship with the Chinese State? And with the Chinese Communist Party?
- What is the role of agencies such as Unesco, FMI, WTO?

Final consideration

- What is the trend in the research publishing industry? What about Blog and micro-blog in academic publishing?
- Could you tell me about the projects of this company for the near future?

A.2.4 Schema of interview used for employee at Centre for World-Class Universities/Academic World university Ranking

General background

- Could you tell me about your personal background and about your current employment?
- Could you describe briefly the history of the Center for World-Class Universities and the Institute of Higher Education of Shanghai Jiao Tong University where are you working?
- Could you describe the history of the ARWU global ranking?

About the network

- What is the relationship between the Center for World-Class Universities, the Institute of Higher Education of Shanghai Jiao Tong University and the global ranking ARWU?
- Which kind of formal/informal link and relations have your research centre with other universities of China beyond the Jiao Tong University?
- What is the relationship between the State and/or the Communist Party?
- What kind of relationship does your research centre have with international agencies like Unesco, FMI, World Bank?

- Could you describe the relationship with the private company Thomson Reuters? Which kind of service do they provide you?

About the International Conference on World-Class Universities (WCU)

- Each year your research centre organises the international meeting Conference on World-Class Universities in Shanghai. Could you briefly describe it? What is the audience? What is the aim of these events?

Final questions

- What does 'quality' mean for you? What does 'excellence' mean? What is the relationship between quality of education/knowledge and global ranking? What is the relationship between excellence and international competition?
- What do you think is the trend for this kind of measurement in China? And at the global level?
- What is the relationship between the growing of student numbers in China and the challenge of increasing the excellence of Chinese educational institutions?

CHAPTER 1

A.3: LIST OF UNIVERSITIES IN PROJECT 211

1. PEKING UNIVERSITY 2. RENMIN UNIVERSITY OF CHINA 3. TSINGHUA UNIVERSITY 4. BEIJING JIAO TONG UNIVERSITY 5. BEIJING UNIVERSITY OF TECHNOLOGY 6. BEIHANG UNIVERSITY 7. BEIJING INSTITUTE OF TECHNOLOGY 8. UNIVERSITY OF SCIENCE AND TECHNOLOGY BEIJING 9. BEIJING UNIVERSITY OF CHEMICAL TECHNOLOGY 10. BEIJING UNIVERSITY OF POSTS AND TELECOMMUNICATIONS 11. CHINA AGRICULTURAL UNIVERSITY 12. BEIJING FORESTRY UNIVERSITY 13. BEIJING UNIVERSITY OF CHINESE MEDICINE 14. BEIJING NORMAL UNIVERSITY 15. BEIJING FOREIGN STUDIES UNIVERSITY 16. COMMUNICATION UNIVERSITY OF CHINA 17. CENTRAL UNIVERSITY OF FINANCE AND ECONOMIC 18. UNIVERSITY OF INTERNATIONAL BUSINESS AND ECONOMICS 19. BEIJING SPORT UNIVERSITY 20. CENTRAL CONSERVATORY OF MUSIC 21. MINZU UNIVERSITY OF CHINA 22. CHINA UNIVERSITY OF POLITICAL SCIENCE AND LAW 23. NORTH CHINA ELECTRIC POWER UNIVERSITY 24. NANKAI UNIVERSITY 25. TIANJIN UNIVERSITY 26. TIANJIN MEDICAL UNIVERSITY 27. HEBEI UNIVERSITY OF TECHNOLOGY 28. TAIYUAN UNIVERSITY OF TECHNOLOGY 29. INNER MONGOLIA UNIVERSITY 30. LIAONING UNIVERSITY 31. DALIAN UNIVERSITY OF TECHNOLOGY 32. NORTHEASTERN UNIVERSITY 33. DALIAN MARITIME UNIVERSITY 34. JILIN UNIVERSITY 35. YANBIAN UNIVERSITY 36. NORTHEAST NORMAL UNIVERSITY 37. HARBIN INSTITUTE OF TECHNOLOGY 38. HARBIN ENGINEERING UNIVERSITY 39. NORTHEAST AGRICULTURAL UNIVERSITY 40. NORTHEAST FORESTRY UNIVERSITY 41. FUDAN UNIVERSITY 42. TONGJI UNIVERSITY 43. SHANGHAI JIAO TONG UNIVERSITY 44. EAST CHINA UNIVERSITY OF SCIENCE AND TECHNOLOGY 45. DONGHUA UNIVERSITY 46. EAST CHINA NORMAL UNIVERSITY 47. SHANGHAI INTERNATIONAL STUDIES UNIVERSITY 48. SHANGHAI UNIVERSITY OF FINANCE AND ECONOMICS 49. SHANGHAI UNIVERSITY 50. SECOND

MILITARY MEDICAL UNIVERSITY 51. NANJING UNIVERSITY 52. SOOCHOW UNIVERSITY 53. SOUTHEAST UNIVERSITY 54. NANJING UNIVERSITY OF AERONAUTICS AND ASTRONAUTICS 55. NANJING UNIVERSITY OF SCIENCE AND TECHNOLOGY 56. CHINA UNIVERSITY OF MINING AND TECHNOLOGY 57. HOHAI UNIVERSITY 58. JIANGNAN UNIVERSITY 59. NANJING AGRICULTURAL UNIVERSITY 60. CHINA PHARMACEUTICAL UNIVERSITY 61. NANJING NORMAL UNIVERSITY 62. ZHEJIANG UNIVERSITY 63. ANHUI UNIVERSITY 64. UNIVERSITY OF SCIENCE AND TECHNOLOGY OF CHINA 65. HEFEI UNIVERSITY OF TECHNOLOGY 66. XIAMEN UNIVERSITY 67. FUZHOU UNIVERSITY 68. NANCHANG UNIVERSITY 69. SHANDONG UNIVERSITY 70. OCEAN UNIVERSITY OF CHINA 71. CHINA UNIVERSITY OF PETROLEUM 72. ZHENGZHOU UNIVERSITY 73. WUHAN UNIVERSITY 74. HUAZHONG UNIVERSITY OF SCIENCE AND TECHNOLOGY 75. CHINA UNIVERSITY OF GEOSCIENCES 76. WUHAN UNIVERSITY OF TECHNOLOGY 77. HUAZHONG AGRICULTURAL UNIVERSITY 78. HUAZHONG NORMAL UNIVERSITY 79. ZHONGNAN UNIVERSITY OF ECONOMICS AND LAW 80. HUNAN UNIVERSITY 81. CENTRAL SOUTH UNIVERSITY 82. HUNAN NORMAL UNIVERSITY 83. NATIONAL UNIVERSITY OF DEFENSE TECHNOLOGY 84. SUN YAT-SEN UNIVERSITY 85. JINAN UNIVERSITY 86. SOUTH CHINA NORMAL UNIVERSITY 87. SOUTH CHINA UNIVERSITY OF TECHNOLOGY 88. GUANGXI UNIVERSITY 89. HAINAN UNIVERSITY 90. SICHUAN UNIVERSITY 91. CHONGQING UNIVERSITY 92. SOUTHWEST JIAO TONG UNIVERSITY 93. UNIVERSITY OF ELECTRONIC SCIENCE AND TECHNOLOGY OF CHINA 94. SICHUAN AGRICULTURAL UNIVERSITY 95. SOUTHWEST UNIVERSITY 96. SOUTHWESTERN UNIVERSITY OF FINANCE AND ECONOMICS 97. GUIZHOU UNIVERSITY 98. YUNNAN UNIVERSITY 99. XIZANG UNIVERSITY 100. NORTHWEST UNIVERSITY 101. XIAN JIAO TONG UNIVERSITY 102. NORTHWESTERN POLYTECHNICAL UNIVERSITY 103. XIDIAN UNIVERSITY 104. CHANGAN UNIVERSITY 105. NORTHWEST A&F UNIVERSITY 106. SHAANXI NORMAL UNIVERSITY 107. FOURTH MILITARY MEDICAL UNIVERSITY 108. LANZHOU UNIVERSITY 109. QINGHAI UNIVERSITY 110. NINGXIA UNIVERSITY 111. XINJIANG UNIVERSITY 112. SHIHEZI UNIVERSITY

A.4: LIST OF UNIVERSITIES IN PROJECT 985

1. Beijing Institute of Technology 2. Beijing Normal University 3. Beijing University of Aeronautics and Astronautics 4. Central South University 5. Central University for Nationalities 6. China Agricultural University 7. Chongqing University 8. Dalian University of Technology 9. Fudan University 10. Harbin Institute of Technology 11. Huazhong University of Science and Technology 12. Hunan University 13. Jilin University 14. Lanzhou University 15. Nanjing University 16. Nankai University 17. National University of Defense Technology 18. Northeastern University 19. Northwest A&F University 20. Northwestern Polytechnical University 21. Ocean University of China 22. Peking University 23. Renmin University of China 24. Shandong University 25. Shanghai Jiaotong University 26. Sichuan University 27. South China University of Technology 28. Southeast University 29. Sun Yat-sen University 30. Tianjin University 31. Tongji University 32. Tsinghua University 33. University of Electronic Science and Technology of China 34. University of Science and Technology of China 35. Wuhan University 36. Xiamen University 37. Xian Jiaotong University 38. Zhejiang University 39. East China Normal University.

CHAPTER 3

A.5.0 Entities that currently operate as a hub, or that they intended to be a hub	
UNITED ARAB EMIRATES	The UAE is comprised of seven Emirates. The semi-independent nature of the Emirates has led several of them to develop "free zones," which exempt the organizations operating within each zone from federal regulation. Originally developed to attract foreign investment from corporations, these free zones have been used during the 2000s to attract foreign educational institutions.
ABU DHABI	This Emirate is attracting and investing in institutions with recognizable names. Both the Sorbonne (France) and New York University (USA) operate campuses in this city, while NYU accepted its first class of students in fall 2010. Abu Dhabi seeks to capitalize on the presence of these elite education institutions to develop itself into a "hub of ideas".
	Over the past decade, Dubai has garnered a great deal of international attention for the aggressive pursuit of international branch campuses and their desire to become an educational hub. Rather than solely investing in their own system, various sub-hubs within Dubai (Dubai Knowledge village, Dubai International Academic city, Dubai International Financial City, Dubai Health Care City,

DUBAI	Dudai Silicon Oasis) have provide a diverse set of educational opportunities to the local expatriate population, as well as, attract foreign students to study in Dubai. Presently, more than 25 Institutes representing 13 different national curriculums (e.g. American, Australian, British, Russia) provide undergraduate and graduate degrees in Dubai.
BAHRAIN	Bahrain indicated in 2007 an interest in developing into an educational hub. There are currently three branch campuses of foreign education providers operating in the country. www.gulf-daily-news.com/NewsDetails.aspx?storyid=184018
KUALA LUMPUR EDUCATION CITY	Currently under development, Kuala Lumpur Education City (KLEC) has two locations planned in the Kuala Lumpur area. One is downtown near Petronas towers, and the other is near Putra Jaya, the government center about 25 km outside of the city. It currently has agreements with Cambridge Judge Business School (UK), Epsom College (UK), and University Sains Malaysia. KLEC's mission is to establish world-class institutions of higher learning as well as primary and secondary education providers within a learning community that includes various support shared facilities. The KLEC Phase I Academic park is projected to be launched in 2013. (www.klec.com.my)

ISKANDAR (MALAYSIA)	Iskandar is a special economic zone in the Malaysia state of Johor, bordering Singapore. The project is administered by Iskandar. Regional Development Authority, and consists of five "flagship zones" devoted to various development projects. Zone B includes an education city and a medical hub. The University of Newcastle (UK) has established a medical school in Iskandar, enrolling its first class in fall 2012. Raffles Education Corporation, a private education provider in South East Asia, is investing in the site and is pursuing development of Raffles University-Iskandar. The explicit attraction of a large space on the outskirts of Singapore reflects the competitive environment for education hubs in the region. (www.iskandarmalaysia.com.my/flagship-b-nusajaya)
SINGAPORE'S GLOBAL SCHOOLHOUSE	Since Singapore's Global Schoolhouse (GS) initiative launched in 2002, it has become home to over 1,200 private education organizations, 44 pre-tertiary schools and 16 leading foreign tertiary institutions, offering international curricula. The aim of the Global Schoolhouse is to make the city-state a "global talent hub". By broadening its educational offerings, GS has attracted over 86,000 international students and has advanced innovation by promoting faculty collaboration with over 7,000 MNCs and 100,000 SMEs in Singapore.
INCHEON FREE ECONOMIC ZONE	Part of the development plan for the Incheon Free Zone in South Korea is to attract international branch campuses in the Songdo Global University Campus. 15 Universities interested in opening a campus include the University of Pavia (Italy), Duke University, Columbia University,

(SOUTH KOREA)	Boston University, George Mason University, Stony Brook University (State University of New York), the University of Illinois at Urbana-Champaign, Carnegie Mellon University and the University of California-San Diego. Several Institutions have engaged in feasibility studies and planning development. (news.broadsideonline.com/2010/04/26/gmu-sets-gaze-on-east-mason-explores-partnership-with-south-korea)
EDUCATION CITY (QATAR)	Education city developed as a way for Qatar to attract predominant academic programs from universities based in the United States. The intent is to reduce the number of Qatari students studying abroad and attract more foreign students to study within Qatar. Education City has six branch campuses from international institutions, which assist Qatar Foundation's goal of bringing in a new "knowledge-based" economy. (www.chron.com/disp/story.mpl/metropolitan/6966196)
REPUBLIC OF PANAMA – CITY OF KNOWLEDGE	Founded by law in 1998 and governed by a semi-autonomous private foundation, the City of Knowledge in the Republic of Panama was originally designed to bring together business, technology and academia in a knowledge-generating hub for the Latin American region. A decade after its inception, the City of Knowledge now extends beyond its physical 300-acre boundary to include dozens of other affiliated institutions and has also become the regional base for the United Nations in Latin America and the Caribbean. (www.ciudaddelsaber.org/en)

JEJU GLOBAL EDUCATION CITY	Jeju Global Education City is an emerging educational hub located off the southern coast of South Korea. This educational hub will focus primarily on secondary education, but will provide post-secondary programs.
HONG KONG EDUCATIONAL HUB	Started in 1997, this plan consist to increase the admission quotas for non-local students to local tertiary institutions. This strategic plan is oriented to enhance and redefine the global centrality of Hong Kong through the trade of tertiary educational services in Asia transforming its public universities as destinations for increasing worldwide student mobility.
Source: www.globalhighered.org/edhubs	

A.5: DATA OF R-INDICATOR

THE DATA FROM HONG KONG SHUE YAN UNIVERSITY (SYHKU) INCLUDES THE DEPARTMENTS OF:

Accounting, Business Administration, Chinese Language & Literature, Counselling and Psychology, Economics and Finance, English Language & Literature, History, Journalism & Communication, Law and Business, Social Work, Sociology.

THE DATA FROM CHINESE HONG KONG UNIVERSITY (CHKU) INCLUDES:

Faculty of Arts: Anthropology, Linguistic, Cultural and religious studies, Music department (all the departments except English and Chinese). Faculty of Business administration. Faculty of Education: educational administration & policy; Education psychology; Sport science & Physical education; Physical education unit. Engineering: computer science and engineering; electronic engineering; information engineering; mechanical and automation engineering; system engineering; engineering management. Faculty of Science: school of Chinese medicine; school of life sciences; department of chemistry; department of mathematics; department of physics; department of statistics. Social sciences: Architecture; Economics; Geography; Resource management government and public administration; journalism and communication; psychology; social work; sociology.

Data of this university does not include the faculty of law and medicine because was difficult in collecting information.

THE DATA FROM THE HONG KONG UNIVERSITY OF SCIENCE AND TECHNOLOGY (HKUST) INCLUDES:

School of Science: Division of Life Science; Department of Chemistry; Department of Mathematics; Department of Physics.

School of Engineering: Department of Chemical and Biomolecular Engineering; Department of Civil and Environmental Engineering; Department of Computer Science and Engineering; Department of Electronic and Computer Engineering; Department of Industrial Engineering and Logistics Management; Department of Mechanical Engineering.

School of Business and Management: Department of Accounting; Department of Economics; Department of Finance; Department of Information Systems, Business Statistics and Operations Management; Department of Marketing; Department of Management.

School of Humanities and Social Sciences: Division of Humanities; Division of Social Science.

TABLE A.5.1

THE ACADEMIC WORKFORCE OF THE CHINESE HONG KONG UNIVERSITY (CHKU). ALL FACULTIES EXCEPT LAW AND MEDICINE.

FACULTY OF ARTS

name	position	qualification	university/country
Allan Keislar	Research Fellow	PhD	UC Berkeley
Chan Chak Lui	Instructor	PhD	CUHK
Chan Kit Ying	Instructor	PhD	University of Warwick
Chan Lung Pun	Assistant Professor	Th.D.	U of Heidelberg
Chan Sui Hung	Assistant Professor	PhD	U of CSD
Chen Ju-chen	Instructor	PhD	Rutgers University
Cheng Chung-yi	Professor	PhD	CUHK
Cheung Chan-fai	Professor	Dr.phil.	Freiburg
Cheung Chi Hang	Assistant Professor	PhD	USC
Cheung Ching-yuen	Instructor	PhD	Tohoku U.
Cheung Hok Ming	Associate Professor	PhD	UCSB
Cheung Lik Kwan	Instructor	PhD	CUHK
Cheung Sui Wai	Associate Professor	D.Phil.	Oxon
Cheung Yam Leung	Assistant Professor	PhD	UCLA
Chong Yau Yuk	Associate Professor	PhD	HKU
Chu Tai Shing	Instructor	PhD	Lancaster
David Faure	Professor	PhD	Princeton University
felix Wang Shi Yuan	Assistant Professor	PhD	Michigan
Fong Ho Yin Ian	Instructor	PhD	HKU
Fu Baoning	Assistant Professor	PhD	Simon. Fraser
Gordon Mathews	Professor	PhD	Cornell University
Gu Yang BA	Professor	PhD	C'nell.
He Xi	Assistant Professor	PhD	CUHK
Helen Mary Grace	Associate Professor	PhD	U.Syd
Ho Chi Ming		PhD	University of Tsukuba
Ho Pui Yin	Professor	PhD	Paris
Hui Cheuk Kuen	Professor	PhD	Cantab
Hung Tao	Assistant Professor	PhD	University of Hong Kong
Inoue Yumi		M.Phil	HKU
Jiang-King Ping	Associate Professor	PhD	Br. Col.
Joseph Bosco	Associate Professor	PhD	Columbia University
Kenneth R. Valpey	Visiting Scholar	D. Phil.	Oxford
Kou Kei-chun	Instructor	PhD	CUHK

Kung Lap Yan	Associate Professor	PhD	Glasgow
Kwan Tze-wan	Professor	Dr.phil.	Ruhr-Universität
Kwan Shui Man	Associate Professor	PhD	CUHK
Lai Chi	Professor	PhD	Chic.
Lai Ming Chiu	Associate Professor	PhD	Toronto
Lai Ming Yan	Associate Professor	PhD	U of Wisconsin
Lai Pan Chiu	Professor	PhD	Lond.
Lau Chong-fuk	Associate Professor	Dr.phil.	Heidelberg
Lau Kwok-keung	Associate Professor	PhD	U. Hawaii
Lau Kwok-ying	Professor	Dr. Phil.	Paris I Sorbonne
Lee Chi Chung	Professor	PhD	Edin
Lee Hun Tak Thomas	Professor	PhD	UCLA
Lee Wood Hung		PhD	Tsukuba University 1989
Leung Yuen Sang		PhD	UCSB
Li Hon Lam	Professor	PhD	Cornell
Li Yafei	Instructor	PhD	CUHK
Liu Xiaogan	Professor	PhD	Peking
Lo Lung Kwong	Professor	PhD	Durham
Louis E. Keloon Ha	Research Fellow	PhD	HKU
Lowry Christopher	Assistant Professor	PhD	Queen's U
Mok Pik Ki	Assistant Professor	PhD	Cantab
Nagy Stephen Robert		PhD	Waseda University
Nakano Lynne Yukie	Professor	PhD	Yale University
Ng Kai-chiu	Instructor	PhD	CUHK
Ng Wai-ming		PhD	Princeton University
Pang Laikwan	Professor	PhD	WashU
Poo Mu-chou		PhD	Johns Hopkins University
Puk Wing Kin	Assistant Professor	D.Phil.	Oxon
Shun Kwong-loi	Professor	PhD	Stanford
Sidney C. H. Cheung	Professor	PhD	Osaka University
Sin Wai Chan	Professor	PhD	U. of London
Siu Kam Wah	Instructor	DLitt	History Kyoto
Siumi Maria Tam	Associate Professor	PhD	University of Hawaii
Sze Yim Binh Felix	Assistant Professor	PhD	U. Bristol
Tam Wai Lun	Professor	PhD	McMaster
Tan Chee-Beng	Professor	PhD	Cornell University
Tan Nam Hon	Assistant Professor	PhD	U of Durham
Tang Chung	Associate Professor	DLitt	University of Tokyo
Tang Wai Lan Gladys	Professor	PhD	Edinburg
Tobias Brandner	Assistant Professor	Th.D.	U of Zurich
Tracey Lie Dan Lu	Professor	PhD	Australian University
Vicente Leticia	Instructor	PhD	Barcelona
Wan Wai Yiu	Professional Consultant	D. Phil.	Oxford
Wang Hui	Instructor	PhD	City University of HK
Wang Ling	Instructor	PhD	City University of HK
Wang Qingjie	Professor	PhD	Tulane
Wannagat Ulrich	Assistant Professor	Dr.phil	BU Wuppertal
Wong Kai-yee	Associate Professor	PhD	A.N.U.
Wong Kun Chun	Professor	Th.D.	Heidelberg
Wong Kwok Pun	Assistant Professor	PhD	University of Toronto

Wong Wai Ching	Associate Professor	PhD	Chic.
Wong Yiu Hong	Instructor	PhD	CUHK
Wu Keping	Assistant Professor	PhD	Boston University
Xue Yu	Assistant Professor	PhD	U of Iowa
Yao Zhihua	Associate Professor	PhD	Boston
Yau Chi	Assistant Professor	PhD	CUHK
Yeung Kwok Keung	Assistant Professor	PhD	CUHK
Ying Fuk Tsang	Associate Professor	PhD	CUHK
Yip Ching Wah	Assistant Professor	Th.D.	Harvard
Yip Choy Yin Virginia	Professor	PhD	S. Calif.
Yip Hon Ming	Professor	PhD	UCLA
Yuanjian He	Professor	PhD	SOAS
Zhng Yanhui	Assistant Professor	PhD	CMU

FACULTY OF BUSINESS ADMINISTRATION

name	**position**	**qualification**	**university/country**
Ahlstrom David	Professor	PhD	New York
Au Kevin Yuk-fai	Associate Professor	PhD	British Columbia
Bonnett Matthew	Assistant Professor	PhD	Lancaster Management U
Cao Clara Wen	Assistant Professor	PhD	Indiana University
Cao Jay J.	Assistant Professor	PhD	Univ of Texas at Austin
Cao Ying	Assistant Professor	PhD	Texas A&M
Chan Andrew Chi-fai	Professor	PhD	CUHK
Chan Samuel Wai-kwong	Associate Professor	PhD	U. of New South Wales
Chan Wai Sum	Professor	PhD	Temple
Chang Song	Assistant Professor	PhD	HKUST
Cheng Joseph W.	Associate Professor	PhD	Maryland
Cheung Daniel Wai-Wah	Senior Instructor	PhD	Southern Illinois University
Cheung Francis Kwok-hun	Associate Professor	PhD	Michigan State
Cheung Gordon Wai Hung		PhD	Virginia Inst. University
Cheung Waiman	Professor	PhD	Rensselaer Institute
Chiu Jimmy Chi-ming	Senior Instructor	MPhil	CUHK
Chow Irene Hau-siu	Professor	PhD	Georgia State
Chow Lap-kei	Senior Instructor	PhD	Texas A & M
Chon Ying Foon	Associate Professor	PhD	Toronto
Chui Alice	Consultant	PhD	Manchester
Chung Ji Woong		PhD	The Ohio State University
Coggins Andrew	Assistant Professor	PhD	Viriginia Unviersity
Dai Xianchi	Consultant	PhD	INSEAD France
Du Timon Chih-ting	Assistant Professor	PhD	Arizona State U.
Fan Dennis K. K.	Professor	PhD	SUNY
Fan Joseph P. H.	Associate Professor	PhD	Pittsburgh
Ferguson Michael J.	Professor	PhD	Minnesota
Fong Wai Ming	Associate Professor	PhD	Ohio State
Fu Pingping	Associate Professor	PhD	SUNY Albany
Fung Michael Ka-yiu	Associate Professor	PhD	Western Ontario

Gao Leilei	Professor	PhD	Stanford
Guillot Didier	Assistant Professor	PhD	ABD UC Berkeley
Harvey Patrick	Professional Consultan	PhD	S. California
He Jia	Professional Consultant	PhD	Wharton
Hsu Vernon Ning	Professor	PhD	Iowa
Hui George Wang-liang	Professor	PhD	Northwestern U
Hui Michael King-man	Senior Instructor	PhD	London
Hui Pamsy Pun Zee	Professor of Marketing	PhD	Texas
Jia Jamie Jian-min	Visiting Scholar	PhD	Texas
Jiang Bo	Professor	PhD	Duke U.
Jin Jang C.	Associate Professor	PhD	Louisiana State
Kan Fu M. Y. Shirley	Associate Professor	PhD	SUFE
Keung Elena Y. L.	Senior Instructor	PhD	Houston
Kim Sun Young	Senior Instructor	PhD	Alberta
Ku Fred Kei-tat	Assistant Professor	PhD	HKUST
Kwok Susanna Wai-yee	Instructor	PhD	HKBU
Lai Vincent Siu-king	Senior Instructor	PhD	Texas at Arlington
Lam Kevin C. K.	Professor	PhD	Toronto
Lam Lee George	Associate Professor	PhD	HKU
Lang Larry H. P.	Adjunct Professor	PhD	Pennsylvania
Lau Chung-ming	Professor	PhD	Texas A & M
Lau Dora Chi-sun	Associate Professor	PhD	UBC
Lau Kin-nam	Professor	PhD	Purdue
Law Anthony	Instructor	PhD	HKU
Law Japhet Sebastian	Professor	PhD	Texas at Austin
Law Kenneth S.	Professor	PhD	Iowa
Lee Ching-chyi	Professor	PhD	Pennsylvania State
Lee Kam-hon	Professor	PhD	Northwestern
Lee Robert P.	Professor	PhD	UCLA
Leung Lawrence C.	Professor	PhD	Virginia State U.
Leung Victor K. L.	Teaching Fellow	PhD	Arkansas
Leung Wai Kin	Associate Professor	PhD	Texas at Austin
Li Hongyi	Associate Professor	PhD	Ohio State
Lin Chen	Professor	PhD	Florida
Liu Ming	Associate Professor	PhD	Duke
Lu Yuan	Professor	PhD	Aston
Lui Iris Tsz Wai	Assistant Professor	PhD	Cornell University
Ma Alfred K. C.	Assistant Professor	PhD	Columbia
Ma Xufei	Assistant Professor	PhD	National U of Singapore
Makino Shige	Professor	PhD	Western Ontario
McGuinness Paul B.	Professor	PhD	Leeds
Mirrlees James A.	Professor-at-Large	PhD	Cambridge
Ng Andrew C. Y.	Assistant Professor	PhD	Iowa
Ng Ignace	Visiting Professor	PhD	Simon Fraser
Ng Jeff	Assistant Professor	PhD	Chicago
Ng Linda Fung-yee	Professor	PhD	Oklahoma State
Ngo Hang-yue	Professor	PhD	Chicago
Powpaka Samart	Associate Professor	PhD	Texas
Qian Gong-ming	Associate Professor	PhD	Lancaster
Rui Oliver Meng	Associate Professor	PhD	Houston

Shen Hao	Assistant Professor	PhD	HKUST
Shih Elbert Yi Chung	Honorary Professor	PhD	Southern Illinois
Sin Leo Yat-ming	Professor	PhD	British Columbia
Thomas Hugh	Associate Professor	PhD	New York
Tian Jenny Jie	Assistant Professor	PhD	U. of Southern California
Tsang Albert	Assistant Professor	PhD	Texas at Dallas
Tse Alan Ching-biu	Professor	PhD	Massey
Tse Eliza Ching-Yick	Professor	PhD	Virginia
Tsui Anna Po Yung	Senior Instructor	PhD	HKU
Tuan Chyau	Adjunct Professor	PhD	Ohio State
Wang Albert Y.	Assistant Professor	PhD	Arizona State
Wang Cong	Associate Professor	PhD	Vanderbilt
Wang Joyce Linghua	Instructor	PhD	HKU
Wang Ko	Professor	PhD	Texas at Austin
Wang Xin	Assistant Professor	PhD	Duke University U.S.A
Wang Yi Hui	Assistant Professor	PhD	UNC-Chapel Hill
Wong Albert C. S.	Associate Professor	PhD	HKU
Wong Chak	Professor	D.Phil.	Oxford
Wong Jacqueline Wai-ting	Senior Instructor	PhD	CUHK
Wong T. J.	Professor	PhD	Univ of California LA
Wu Woody Y	Professor	PhD	New York
Wyer Robert S.	Visiting Professor	PhD	University of Colorado
Yeh Jason J. H.	Associate Professor	PhD	Wisconsin
Yeung Jeff Hoi-yan	Professional Consultant	PhD	Queensland U.
Yiu Daphne Wing-yee	Associate Professor	PhD	Oklahoma
Young Danqing	Associate Professor	PhD	Connecticut
Young Leslie S. F.	Professor	DPhil	Oxford
Yu Julie Hung-hsua	Associate Professor	PhD	Missouri at Columbia
Yuen Andrew Chi-lok	Assistant Professor	PhD	U. of British Columbia
Zhang Hua	Professor	PhD	McGill
Zhang Meng	Assistant Professor	PhD	University of Toronto
Zhang Tianyu	Assistant Professor	PhD	HKUST
Zhang Yinglei	Assistant Professor	PhD	The Ohio State University
Zhao Xiande	Professor	PhD	U. of Utah
Zhou Deming	Assistant Professor	PhD	UCLA
Zhou Yinggang	Assistant Professor	PhD	Xiamen University
		PhD	Cornell Univ.
Zhu Kaijie	Associate Professor	PhD	Stanford
Zhu Susan Hong	Assistant Professor	PhD	Texas A&M
Zhu Zhong Yan	Assistant Professor	PhD	Indiana University
Zhuang Zili	Assistant Professor	PhD	Carnegie Mellon University

FACULTY OF EDUCATION

DEPARTMENT OF EDUCATIONAL ADMINISTRATION AND POLICY, EDUCATION PSYCHOLOGY, SPORT, SCIENCE AND PHYSICAL EDUCATION.

name	position	qualification	university/country
Chan Lily		PhD	London
Chan Wan-Ka	Senior Instructor	PhD	University of Manchester .
Chang Lei		PhD	U. of Southern California
Chen Shuangye		PhD	CUHK
Cheng Hon-man		PhD	University of London
Cheng Pui-wan		PhD	Alberta
Cheng Zi Juan		PhD	CUHK
Cheung Sin-pui Derek		PhD	W. Aust.
Choi Po-king		DPhil	Oxon
Chu Ka Wing Julia		PhD	CUHK
Chung Yue-ping		PhD	Stanford
Coniam David	professor	PhD	Birmingham
Fok Ping Kwan		PhD	CUHK
Fung Kit Ho		PhD	CUHK
Ha Amy Sau-Ching	Professor	PhD	Walden University USA
Hau Kit-tai		PhD	HKU
Ho Man-koon		PhD	CUHK
Ho Sui-chu		PhD	UBC
Jong Siu-yung		PhD	CUHK
Lai Ling Yan		PhD	UBC
Lai Man-hong		PhD	CUHK
Lam Ka-ka		PhD	CUHK
Lau Kit Ling		PhD	CUHK
Lau Kwok-keung		PhD	Hawaii
Lau Siu-ying		PhD	CUHK
Law Huk Yuen		PhD	UEA
Lee Kit Bing		PhD	HKU
Lee Ngar Yin		PhD	Princeton
Leung Seung-ming		PhD	Illinois
Mak Chan Shuk-yin		PhD	Hull
Ng Fei-yin		PhD	Illinois
Ng Mau Yuen		PhD	CUHK
Ng Pun Hon		PhD	HKU
Ni Yu-jing		PhD	UCLA
Ou Dongshu		PhD	Columbia
Pang Sun-keung		PhD	Newcastle Australia
Pong Suet-ling		PhD	Chicago
Shek Chun Ka-wai		PhD	HKU
Shiu Ling-po		PhD	UCSD
Siu Fung Ying		PhD	CUHK
Stephen Heung-Sang Wong		PhD	Loughborough

Tam Wai-ming		PhD	CUHK
Tang Lai-yiu		PhD	Warwick
Tsang Wing-kwong		PhD	CUHK
Tse Chi-shing		PhD	SUNY-Albany
Tse Kwan-choi		PhD	Warwick
Wong Lai Ngok		PhD	Sydney
Wong Ngai-ying		PhD	HKU
Wong Wan-chi		Dr.Phil.	Universitaet Heidelberg
Angus Burnett	Associate Professor	PhD	Western Australia
Yan Jin-Hong		PhD	Arizona State U. USA
Yeung Sau-chu		PhD	UCLA

ENGEGNERING

COMPUTER SCIENCE AND ENGINEERING, ELECTRONIC ENGINEERING, INFORMATION ENGINEERING, MECHANICAL AND AUTOMATION ENGINEERING, SYSTEM ENGINEERING AND ENGINEERING MANAGEMENT.

name	**position**	**qualification**	**university/country**
Cai Leizhen	Professor	PhD	University of Toronto
Cham Wai Kuen	Professor	PhD	Loughborough
Chan Lai-Wan Lauren	Professor	PhD	Cantab
Chan Chun-Kit	Associate Professor	PhD	CUHK
Chan Kam Tai	Professor	PhD	Cornell
Chan Yuen-Yan	Assistant Professor	PhD	CUHK
Chang Ming-Yuen	Associate Professor	PhD	Cantab
Chen Nan	Assistant Professor	PhD	Columbia
Chen Youhua	Associate Professor	PhD	Management Toronto
Chen Lian-Kuan	Professor	PhD	Columbia Univ.
Chen Ming-Hua	Assistant Professor	PhD	UC Berkeley
Cheng Chun Hung	Associate Professor	PhD	University of lowa
Cheng Hong	Assistant Professor	PhD	University of Illinois
Cheng Kwok Keung	Professor	PhD	London
Chester Shu	Professor	PhD	Columbia
Cheung Kwok-Wai	Professor	PhD	Caltech
Ching Pak Chung	Professor	PhD	Liverpool
Chiu Dah-Ming	Professor	PhD	Harv.
Choy Chiu Sing	Professor	PhD	Manchester
Chung Chi-kit	Professor	PhD	Comp. Engr.
Chung Yan Poon	Assistant Professor	PhD	CUHK
Du Ruxu	Professor	PHD	University of Michigan
Fang Shu-cherng	Adjunct Professor	PhD	Northwestern University
Fu Ada Waichee	Associate Professor	PhD	Simon Fraser U
Hanqiu Sun	Associate Professor	PhD	Alberta
Ho Pui Aaron	Professor	PhD	Nottingham
Hon Hsiao-Wuen	Professor	PhD	Carnegie Mellon University
Hon Ki Tsang	Professor	PhD	Cambridge
Huang Jian-Wei	Assistant Professor	PhD	Northwestern Univeristy

Hui Kin-chuen	Professor	PhD	University of Hong Kong
Hui Yu-Ngai	Adjunct Professor	PhD	MIT
Hung Tat Tsui	Adjunct Professor	PhD	Birmingham
Irwin King	Professor	PhD	USC
Jia Jiaya Leo	Associate Professor	PhD	CHKU
Jie Huang	Professor	PhD	Johns Hopkins University
John C.S. Lui	Professor	PhD	UCLA
Kevin Yuk-Lap Yip		PhD	Yale
Kwong Chung-ping	Professor	PhD	CHKU
Lam Kai Pui	Professor	DPhil	Oxford University
Lam Wai	Professor	PhD	University of WaterLoo
Lau Wing-Cheong	Associate Professor	PhD	Texas
Lee Jimmy Ho Man		PhD	Victoria
Lee Moon-Chuen	Associate Professor	PhD	London
Lee Tong Tony	Emeritus Professor	PhD	Polytech. Inst. Of NY
Lee Yiu-Bun Jack	Associate Professor	PhD	CUHK
Leung Kwai Sun	Assistant Professor	PhD	HKUST
Leung May-Yee	Professor	PhD	MIT
Leung Ka Nang	Assistant Professor	PhD	HKUST
Leung Kwong-Sak	Professor	PhD	Lond.
Li Duan	Professor	PhD	Case Western Reserve U.
Li Wen Jung	Professor	PhD	U. of California Los Angeles
Liao Wei-Hsin	Professor	PhD	Pennsylvania State University
Liew Soung Chang	Professor	PhD	MIT
Lin Chinlon	Adjunct Professor	PhD	UC Berkeley
Liu Yun-hui	Professor	PhD	University of Tokyo
Lok Tat-Ming	Associate Professor	PhD	Purdue
Luo Zhi Quan	Adjunct Professor	PhD	MIT
Meng Helen Mei-Ling	Professor	PhD	MIT USA
Meng Qing Hu	Professor	PhD	Victoria Canada
Michael R. Lyu		PhD	UCLA
Nair Chandra M.	Assistant Professor	PhD	Stanford
Ng Chi-Kong	Senior Instructor	PhD	CHKU
Ng Wai-Yin	Associate Professor	PhD	Cantab
Ngan King Ngi	Professor	PhD	Loughborough
Patrick P. C. Lee	Assistant Professor	PhD	Columbia University
Pheng hann Heng		PhD	Comp. Science
Pun Kong Pang	Associate Professor	PhD	IST
Qiang Xu	Assistant Professor	PhD	McMaster Canada
Shengyu Zhang	Assistant Professor	PhD	Princeton University.
Shum Wing-Ki	Part-time Lecturer	PhD	USC
Shuo-Yen Robert Li	Professor	PhD	UC Berkeley
Sidharth Sid	Assistant Professor	PhD	Caltech
So Man-Cho	Assistant Professor	PhD	Stanford University
Soong Frank K.	Adjunct Professor	PhD	Stanford University
Tan Lee	Professor	PhD	CUHK
Tang Wai Chung		PhD	CUHK
Tang Xiaoou	Professor	PhD	MIT
Thierry Blu	Professor	PhD	Télécom Paris
Tong Fuk-Kay	Adjunct Professor	PhD	Col.

Wah W. Benjamin		PhD	UC Berkeley
Wang Jun	Professor	PhD	Case Western Reserve U.
Wang Yu	Professor	PhD	Carnegie Mellon University
Wang C. L.	Associate Professor	PhD	HKUST
Wang Xiaogang	Assistant Professor	PhD	MIT
Wei Keh-Wei	Professor	PhD	Hawaii
Wei Lun	Research Professor	PhD	Michigan
Wing Kin Ken	Assistant Professor	PhD	CUHK
Wong Kam Fai	Professor	PhD	Edinburgh University
Wong Chak-Kuen	Professor Emeritus	PhD	Columbia
Wong Ching Ping	Professor	PhD	Pennsylvania State
Wong Man Hon	Associate Professor	PhD	UCSB
Wong Po-Choi	Adjunct Professor	PhD	CUHK
Wong Tsz Yeung		PhD	CHKU
Wong Wing Shing	Professor	PhD	Harvard
Wu David Yu-Liang	Professor	PhD	UCSB
Wu Ke Li	Professor	PhD	Laval
Xu Yangsheng	Professor	PhD	University of Pennsylvania
Xu Dongyan	Assistant Professor	PhD	Vanderbilt University
Xu Lei	Professor	PhD	Tsinghua Univ.
Yan Houmin	Professor	PhD	University of Toronto
Yeung Lap Kun	Assistant Professor	PhD	UCLA
Yeung Wai-Ho	Professor	PhD	Cornell
Yu Gang	Adjunct Professor	PhD	University of Pennsylvania
Yu Xu Jeffrey	Professor	PhD	Tsukuba Japan
Yue On-ching	Adjunct Professor	PhD	UC San Diego
Yum Tak-Shing	Professor	PhD	Col.
Yung Pun To	Assistant Professor	PhD	Caltech
Zhang Shuzhong	Professor	PhD	Erasmus University
Zhang Ying-Jun	Associate Professor	PhD	HKUST
Zhang Yuan Ting	Professor	PhD	UNB Canada
Zhao Ni	Assistant Professor	PhD	University of Cambridge
Zhou Xiang	Assistant Professor	PhD	North Carolina University
Zhou Xuny	Professor	PhD	Fudan University

FACULTY OF SCIENCE

SCHOOL OF CHINESE MEDICINE, SCHOOL OF LIFE SCIENCES, DEPARTMENT OF CHEMISTRY, DEPARTMENT OF MATHEMATICS, DEPARTMENT OF PHYSICS, DEPARTMENT OF STATISTICS

name	**position**	**qualification**	**university/country**
Ang Put Jr.		PhD	Br. Col.
Au Kwok Keung	Associated professor	PhD	California
Au Wing Ngor		PhD	HK
Au-Yeung C.F.	Professor	PhD	McM.
Bao Xinhe	Emeritus Professor	PhD	Fudan University China

Bo Zheng	Assistant Professor	PhD	Duke University
Chan Ho Yin		PhD	Cantab
Chan Hon Fu		PhD	New York
Chan Kin Shing	Professor	PhD	University of Chicago
Chan King Ming		PhD	Nfld.
Chan Man Chor	Professor	PhD	The University of Chicago
Chan Ngai	Professor	PhD	University of Maryland
Chan Ping-shing	Associated Professor	PhD	McMaster
Chan Sunney I.	Honorary Professor	PhD	Berkeley
Chan Ting Fung	Assistant Professor	PhD	Wash.
Chan Tze-Lock	Adjunct Professor	PhD	Tulane
Chan Wing Fat		PhD	British Columbia
Chen F. C.	Honorary Professor	PhD	Brandeis
Chen Zhenyu	Professor	PhD	Mass.
Cheng C. M.	Assistant Professor	PhD	HK
Cheng K. M.	Instructor	PhD	HK
Cheung Chi Keung		PhD	NSW
Cheung Leung Fu	Senior Inst.	PhD	Bonn
Cheung Siu Hung	Professor	PhD	Temple
Cheung Yu San	Instructor	PhD	Iowa State
Ching E. S. C.	Professor	PhD	Chicago
Chiu Chi Ming	Senior Instructor	PhD	HKU
Chiu Siu Wai		PhD	Manc.
Chou Kai Seng	Professor	PhD	New York
Chow Cheung Ming	Instructor	PhD	Oxford
Chu Ka Hou	Professor	PhD	MIT/WHOI
Chu Lee Man		PhD	Liv.
Chu M. C.		PhD	Caltech
Chung Hau Yin		PhD	Louisiana State
Chung Kwok Cheong	Instructor	PhD	CUHK
Chung Tsz Shun	Assistant professor	PhD	UCLA
Duan Renjun	Assistent professor	PhD	CityU HK
Feng Dejun	Associated professor	PhD	Wuhan
Fong Wing Chung	Instructor	DPhil	Oxford
Fong Wing Ping	Professor	PhD	CUHK
Fung Ming Chiu	professor	PhD	ANU
Ge Wei	Professor	PhD	Alta
Gu Ming-gao	Professor	PhD	Columbia
Gu S. J.	Assistant Professor	PhD	Zhejiang
Gubernatis J. E.	Adjunct Professor	PhD	Case
Hark S. K.		PhD	SUNY
Ho Chun-Yu	Professor	Post-doc	MIT
Ho Wing Shing		PhD	NY State
Hong Liang-Zhi	Assistant Professor	PhD	CHKU
Hui Glen K.C.	Teaching Fellow	PhD	British Columbia
Hui P. M.		PhD	Ohio State
Jiang Liwen	Professor	PhD	S. Fraser
Jianqing Fan	Professor	PhD	Princeton University
Kong Siu Kai	Professor	PhD	CUHK
Kui H. W.		PhD	Harv

Kwan Hoi Shan	Professor	PhD	UC Davis
Kwan Kin Ming	Assistant Professor	PhD	HK
Kwong N. H.	Professor	PhD	California Technology
Lai H. M.	Adjunct Professor	PhD	Dartmouth
Lam Hon Ming		PhD	Northwestern
Lau Chi Hin	Instructor	PhD	HKU
Lau Ka Sing	Research Associate	PhD	Washington
Lau Kwok Fai	Assistant Professor	PhD	CUHK
Lau L. W. M.	Visiting Professor	PhD	UBC
Law C. K.	Associate Professor	PhD	Rochester
Lee Hung Kay	Associate Professor	PhD	CHKU
Lee Sau Tuen		PhD	Cornell.
Lee Sik-yum	Professor	PhD	UCLA
Lee W. K.	Adjunct Professor	PhD	Cincinnati
Leung Cham-Fai	Assistant Professor	PhD	CHKU
Leung Chi Wai	Associated professor	PhD	Manchester
Leung Kevin W.P.	Professor	PhD	Western Australia
Leung Kwok Nam	Professor	PhD	ANU
Leung Lai Kwok		PhD	Kentucky
Leung Nai Chung Conan	Professor	PhD	MIT
Leung P. T.		PhD	CUHK
Li Chun Che	Instructor	PhD	UCLA
Li Kim Hung Senior	lectur	PhD	Chicago
Li P. W.	Assistant Professor	PhD	U Texas
Li Q.	Associate Professor	PhD	Northwestern
Li Wai Kee	Emeritus Professor	PhD	Michigan
Lin H. Q.		PhD	UC San Diego
Lin L. M.	Instructor	PhD	Washington
Liu R. B.	Associate Professor	PhD	CAS
Liu Zhifeng	Professor	PhD	Western Ontario
Lo C. F.	Associate Professor	PhD	MIT
Lo Fai Hang	Instructors	PhD	CUHK
Lo Gigi Pui-Chi	Assistant Professor	PhD	CHKU
Loong C. K.	Adjunct Professor	PhD	Iowa State
Lui Lok Ming	Assistant professor	PhD	UCLA
Mak Kendrew K.W.	Senior Instructor	PhD	CHKU
Miao Qian	Assistant Professor	Ph. D.	Columbia University
Mok Chung Pang	Assistant professor	PhD	Harvard
Ng D. H. L.	Associate Professor	PhD	Manitoba
Ng Dennis K. P.	Professor	D.Phil.	University of Oxford
Ng Kung Fu	Research professor	PhD	Wales
Ngai Hung Kui	Instructor	PhD	CUHK
Ngai Sai Ming		PhD	Alta.
Ngai To	Assistant Professor	PhD	CHKU
Ngo Chi Ki	Associate Professor	PhD	UC San Diego
Ong D. H.	Associate Professor	PhD	Northwestern
Pang K. M.	Instructor	PhD	CUHK
Peng Xiao Shui	Assistant Professor	PhD	CHKU
Poon Wai-yin	Professor	PhD	UCLA
Remus Kwok-Wah Ho	Instructor	PhD	HKUST

Shaw Pang Chui		PhD	London
Shing Tony K.M.	Professor	PhD	Birkbeck College
Sik Lok Lam	Associate Professor	PhD	CHKU
Song Xin Yuan	Associated professor	PhD	CUHK
Suen W. M.	Honorary Professor	PhD	Caltech
Sun Samuel Sai Ming	Research Professor	PhD	Wis.-Madison
T-W. Dominic Chan		PhD	University of Warwick U.K.
Tam Luen Fai	Assistant professor	PhD	Stanford
Tam S.W.	Emeritus Professor	PhD	Nott.
Tan Baocai	Associate Professor	PhD	Florida USA
Tong S. S.	Instructor	PhD	CUHK
Tsang Suk Ying	Assistant Professor	PhD	CUHK
Wan Yau Heng	Professor	PhD	Stanford
Wang Dajun	Assistant Professor	PhD	Connecticut
Wang Jianfang	Assistant Professor	PhD	Harvard
Wang K. D.	Assistant Professor	PhD	USTC
Wei Juncheng		PhD	Minnesota
Wei Lun	Research Professor	PhD	U. of British Columbia
Wong Chak Fu	Instructor	PhD	CUHK
Wong Chong Kim		PhD	Toronto
Wong H. K.		PhD	Northwestern
Wong Henry N.C.	Professor	PhD	University College London
Wong Hoi Ying	Associatd professor	PhD	MPhil HKUST
Wong K. Y.	Associate Professor	PhD	U Penn
Wong Kam Bo		PhD	Cantab
Wong Po Keung		PhD	UC Davis
Wong Samuel Po-Shing		PhD	Stanford
Wong Wing Lei	Instructors	PhD	CUHK
Wong Yum Shing		PhD	UC Davis
Woo Ying Shiu		PhD	HK
Wu C.	Honorary Professor	PhD	SUNY
Wu Chi	Professor	PhD	State University of New York
Xia Jiang	Assistant Professor	PhD	Stanford University
Xia K.Q.		PhD	Pittsburgh
Xiao X. D.		PhD	UC Berkeley
Xiaodan Fan	Assistant Professor	PhD	Harvard University
Xin Zhou Ping		PhD	Michigan
Xu L.	Assistant Professor	PhD	Chicago
Yang C. N.	Professor-at-Large	PhD	Chicago
Yau Shing Tung		PhD	Harvard
Young K.	Professor	PhD	Caltech
Yu Jimmy C.	Professor	PhD	Idaho
Yu K. W.		PhD	UCLA
Yu Simon	Adjunct Professor	PhD	Washington
Yu Weichang	Associate Professor	PhD	Missouri
Zhao Z. X. Hon		PhD	CUHK
Zhu S. Y.		PhD	Shanghai JiaoTong
Zou Jun	Professor	PhD	Chinese Academy of Sci.
Zuowei Xie	Professor	PhD	Technische Universität Berlin and Shanghai Institute

SOCIAL SCIENCES

ARCHITECTURE, ECONOMICS, GEOGRAPHY AND RESOURCE MANAGEMENT, GOVERNMENT AND PUBLIC ADMINISTRATION, JOURNALISM AND COMMUNICATION, PSYCHOLOGY, SOCIAL WORK, SOCIOLOGY

name	position	qualification	university/country
Alan Chun Nang Wong	Assistant Professor	PhD	Vanderbilt University
Ao Dan	Assistant Professor	PhD	Duke University 2007
Au Winton Wing Tung	Associate Professor	PhD	Illinois
Bond Michael Harris	Emeritus Professor	PhD	Stanford
Chan Joseph Man	Professor	PhD	University of Minnesota
Chan Agnes Sui Yin	Professor	PhD	UCSD
Chan Chi-ho	Assistant Professor	PhD	HKU
Chan Darius Kwan Shing	Associate Professor	PhD	Illinois
Chan Hoi-man	Associate Professor	PhD	University of Toronto 1989
Chan Kin-man	Associate Professor	PhD	Yale University 1995
Chan Wai	Associate Professor	PhD	UCLA
Chan Ying-keung	Adjunct Professor	PhD	Bordeaux University
Chang Catherine	Professor	PhD	Southern California
Chao Chi Chur	Professor	PhD	S. Illinois
Che Jiahua	Associate Professor	PhD	Stanford University
Chen Hsuan Chih	Professor	PhD	Kansas
Chen Ji-kang	Assistant Professor	PhD	U of Southern California
Chen Yongqin	Professor	PhD	Georgia
Cheung Fanny Mui Ching	Professor	PhD	Minnesota
Cheung Him	Professor	PhD	Kansas
Cheung Mei-chun	Instructor I	PhD	U Calgary
Cheung Tak-sing	Adjunct Professor	PhD	State University of New York
Cheung Wai-ting	Assistant Professor	PhD	CHKU
Cheung Yuet-wah	Professor	PhD	University of Toronto 1982
Cheung Yuk-man	Instructor	PhD	CHKU
Chiu Stephen Wing-kai	Professor	PhD	Princeton University 1992
Choi Susanne Y. P.	Associate Professor	DPhil	Oxford University
Chong Tai Leung	Associate Professor	PhD	Rochester
Chow Po Chung	Assistant Professor	PhD	LSE London
Chu Donna S.C.	Assistant Professor	PhD	HKU
Chung Barick	Instructor	PhD	Indiana
Dai Haijing	Assistant Professor	PhD	University of Michigan
Delang O.	Assistant Professor	PhD	NUS
Du Julan	Associate Professor	PhD	Harvard
Fung Anthony Y.H	Professor	PhD	University of Minnesota
Fung Helene Hoi Lam	Associate Professor	PhD	Stanford
Fung Tung	Professor	PhD	Waterloo
Han Jing	Assistant Professor	Ph.D	Ohio State University
Huang Bo		PhD	CAS
Huang Christine Yi-Hui	Professor	PhD	University of Maryland
Huang Liqiang	Assistant Professor	PhD	U. of California SD

Huang Yefang	Senior Instructor	PhD	CUHK
Jin Lei	Assistant Professor	PhD	University of Chicago 2005
Ke Rongzhu	Assistant Professor	PhD	MIT
Kenny James Francis	Associate Professor	PhD	Syracuse University
Kim Doo-hwan	Assistant Professor	PhD	University of Chicago 2004
Kim Jee-young	Assistant Professor	PhD	Harvard University 2008
King Ambrose Yeo-chi	Emeritus Professor	PhD	Pittsburgh U. 1970
Kitty Yau Fong Fung	Instructor I	PhD	CHKU
Ko Kwan-wai	Instructor	PhD	McGill U.
Ku Kei Tat	Part-time Lecturer	PhD	HKUST
Kuan Hsin Chi	Emeritus Professor	PhD	Munich
Kwong Kai Sun	Associate Professor	PhD	British Columbia
Lam Ching-man	Associate Professor	PhD	W. Laurier
Lam Kin Che	Professor	PhD	New England
Lau Siu-kai	Emeritus Professor	PhD	U. of Minnesota 1975
Lau Siu-lun	Instructor	PhD	CHKU
Lau Yuk-king	Professional Consultant	PhD	CUHK
Law Ming-fai	Assistant Professor	PhD	CUHK
Lee Francis L.F.	Associate Professor	PhD	Stanford University
Lee Kaman K.M.	Associate Professor	PhD	HKBU
Lee King-wa	Instructor	PhD	HKU
Lee Lai Annisa	Assistant Professor	PhD	U. of North Carolina
Lee Nayoung	Assistant Professor	PhD	U. of Southern California
Lee Nelson Ka Kiu	Instructor	PhD	CUHK
Lee Paul S.N.	Professor	PhD	University of Michigan
Lee Rance Pui Leung	Emeritus Professor	PhD	U. of Pittsburgh 1968
Leung C.	Assistant Professor	PhD	HKU
Leung Freedom Yiu Kin	Associate Professor	PhD	Concordia
Leung Grace L.K.	Instructor	PhD	CHKU
Leung Louis W.	Professor	PhD	University of Texas at Austin
Leung Patrick	Associate Professor	PhD	Harvard
Leung Patrick Wing Leung	Professor	PhD	Sheffield
Leung Tin Cheuk	Assistant Professor	PhD	University of Minnesota
Leung Yee	Professor	PhD	Colorado
Leung Yuk Chun	Instructor	M.Phil	Cambridge
Leung Yuk-ki	Professional Consultant	PhD	CUHK
Li Lianjiang	Professor	PhD	Ohio State U.
Li Duozhe	Assistant Professor	PhD	Boston University
Lin Hui	Professor	PhD	State U. of New York
Liu Pak Wai	Professor	PhD	Stanford
Lo Ka Man	Assistant Professor	PhD	Western Ontario
Lo Ven-hwei	Professor	PhD	University of Missouri
Ma Shu Yun	Professor	PhD	Toronto
Ma Eric K.W.	Professor	PhD	University of London
Ma Lai-chong	Professor	PhD	HKU
Ma Ngok	Associate Professor	PhD	UCLA
Mak Winnie W.S.	Associate Professor	PhD	U.California
Marafa	Associate Professor	PhD	CUHK
Mok Kai Chung	Assistant Professor	PhD	Northwestern University
Ng Ka Ho	Assistant Professor	PhD	Toronto

Ng Kai Hon	Assistant Professor	PhD	Sheffield
Ng Sai Leung	Associate Professor	PhD	Western Ontario
Ngai Ngan-pun	Professor	PhD	Sheffield
Ngai Sek-yum	Professor	PhD	CUHK
Or Tsz-ming	Instructor	PhD	University of Manchester
Park Sung Yong	Assistant Professor	PhD	University of Illinois
Qiu Jack Linchuan	Associate Professor	PhD	U. of Southern California
Shen Jianfa	Professor	PhD	London
Shi Kang	Assistant Professor	PhD	UBC
Shik Wai-yan	Assistant Professor	PhD	Toronto
Smith William	Assistant Professor	PhD	Univ. of Warwick
So Clement Y. K.	Professor	PhD	Annenberg S. Pennsylvania
Song Zheng	Assistant Professor	PhD	IIES Stockholm University
Spires Anthony J.	Assistant Professor	PhD	Yale University 2007
Sung Yun Wing	Professor	PhD	Minnesota
Takeshi Hamamura	Assistant Professor	PhD	U. of British Columbia
Tam Hau-lin	Instructor I	PhD	CUHK
Tam Tony Hong-wing	Professor	PhD	U. of Chicago 1990
Tao Lin	Assistant Professor	PhD	Harvard University 2007
Ting Kwok-fai	Professor	PhD	University of North Carolina
To Siu-ming	Assistant Professor	PhD	CUHK
Tong Yuying	Assistant Professor	PhD	University of North Carolina
Tsao King Kwun	Associate Professor	PhD	Chic
Tsui Kai Yuen	Professor	PhD	Toronto
Wang Shaoguang	Professor	PhD	Cornell
Wang Qian	Assistant Professor	PhD	Illinois
Wang Yu Assistant	Professor	PhD	New York
Wong Stan Hok-Wui	Assistant Professor	PhD	UCLA
Wong Wilson Wai Ho	Associate Professor	PhD	Syracuse
Wong Chack-kie	Professor	PhD	Sheffield
Wong Hung	Associate Professor	PhD	Warwick
Wong Kam Chau	Associate Professor	PhD	Minnesota
Wong Suk-ying	Professor	PhD	Stanford University 1989
Woo Wai-chiu	Instructor	PhD	Monash
Woo Wai-chiu	Instructor	PhD	Monash
Wu Fengshi	Assistant Professor	PhD	University of Maryland
Wu Qiao-bing	Assistant Professor	PhD	U. of Southern California
Xie Yu	Adjunct Professor	PhD	U.of Wisconsin-Madison
Xu Jiang	Assistant Professor	PhD	Hong Kong
Xu Ying	Assistant Professor	PhD	CUHK
Xu Yuan	Assistant Professor	PhD	Princeton
Yan Wai Hin	Instructor	PhD	HKU
Yang Dennis	Professor	PhD	Chicago
Yip Chong Kee	Professor	PhD	Penn State
Yiu Kei Tsang	Instructor I	PhD	CHKU
Yung Chor Wing	Senior Instructor	PhD	CUHK
Zhan Jing Vivian	Assistant Professor	PhD	UCLA
Zhang Hongliang	Assistant Professor	PhD	MIT
Zhang Junsen	Professor	PhD	McMaster
Zhang Xuexin	Assistant Professor	PhD	Princeton

Zhong Sara Hua	Assistant Professor	PhD	Pennsylvania State University

TABLE A.5.2: THE ACADEMIC WORKFORCE OF THE HONG KONG UNIVERSITY OF SCIENCE AND TECHNOLOGY (HKUST)

SCHOOL OF SCIENCE

name	position	qualification	university/country
Altman Michael S.	Professor	PhD	Brown University 1988
Banfield David K.	Professor	PhD	U. of British Columbia
Chan Che Ting	Professor	PhD	California Berkeley
Chan Ho Bun	Associate Professor	PhD	MIT
Chan Kwing Lam	Professor	PhD	Princeton University 1974
Chang Donald C.	Professor	PhD	Rice University 1970
Chang Huai-Liang	Assistant Professor	PhD	Stanford
Chasnov Jeffrey R.	Associate Professor	PhD	Columbia University
Chen Beifang	Professor	PhD	University of New York
Chen Kani	Professor	PhD	Columbia University
Chen Tian Wen	Assistant Professor	PhD	CHKU
Cheng Shiu-Yuen	Professor	PhD	California Berkeley
Chiang Yik Man	Associate Professor	PhD	University of London 1991
Chow King L.	Professor	PhD	Baylor College of Medicine
Chung Kenny K. K.	Assistant Professor	PhD	University of Cambridge
Dai Wei Min	Professor	PhD	Kyoto University 1990
Du Qiang	Adjunct Professor	PhD	Carnegie Mellon
Du Shengwang	Assistant Professor	PhD	U.Colorado at Boulder
Foreman Bradley	Associate Professor	PhD	Cornell University 1995
Fung Kwok Kwong	Senior Lecturer	PhD	University of Bristol 1979
Gan Jianping	Associate Professor	PhD	McGill University Montreal
Guo Zhihong	Associate Professor	PhD	University of Minnesota 1998
Han Yilong	Assistant Professor	PhD	University of Chicago 2003
Haynes Richard	Professor	PhD	University of Western Australia
He Xuhua	Assistant Professor	PhD	Massachusetts Inst of Tech
Hu Jishan	Associate Professor	PhD	Princeton University 1991
Huang Jing-Song	Professor	PhD	MIT
Huang Pingbo	Associate Professor	PhD	University of Cincinnati 1993
Huang Xuhui	Assistant Professor	PhD	Columbia University
Ip Nancy Yuk-Yu	Professor	PhD	Harvard Medical School
Jia Guocheng	Professor	PhD	Ohio State University 1989
Jing Bing Yi	Professor	PhD	University of Syndey 1993
Ko Robert K. M.	Professor	PhD	University of Columbia
Kung Shain Dow	Adjunct Professor	PhD	University of Toronto
Kwok Yue Kuen	Professor	PhD	Brown University 1985
Lai Chi Wai	Assistant Professor	PhD	British Columbia

Lau Stanley C. K.	Assistant Professor	PhD	HKUST 2001
Lau William K. M.	Adjunct Professor	PhD	University of Washington
Lee Kevin A. W.	Associate Professor	PhD	McGill University 1985
Leung Pak Wo	Professor	PhD	Cornell University 1990
Leung Shing Yu	Assistant Professor	PhD	UCLA
Leung Wa Hung	Professor	PhD	University of Hong Kong 1989
Li Jian-Shu	Professor	PhD	Yale University 1987
Li Kin Yin	Associate Professor	PhD	California Berkeley
Li Weiping	Professor	PhD	Columbia University 1991
Li Xiaoyuan	Professor	PhD	Princeton University 1988
Liang Chun	Associate Professor	PhD	Brown University 1993
Lin Nian	Associate Professor	PhD	HKUST 1997
Lin Zhenyang	Professor	PhD	Oxford University 1989
Ling Shiqing	Professor	PhD	University of Hong Kong 1997
LiNing	Professor	PhD	University of Washington 1989
Liu Hongbin	Associate Professor	PhD	University of Hawaii at Manoa
Lortz Rolf Walter	Assistant Professor	PhD	Karlsruhe
Loy Michael M. T.	Professor	PhD	Uni. California Berkeley
Loy Michael M. T.	Professor	PhD	California Berkeley
Meng Guowu	Associate Professor	PhD	Brown University 1993
Miller Andrew L.	Professor	PhD	University of Dundee 1986
Mong William M. W.	Professor	PhD	Princeton University
Moy Allen	Professor	PhD	University of Chicago 1982
Mu Mo	Associate Professor	PhD	Academia Sinica 1987
Ng Tai Kai		PhD	Northwestern University 1987
Peng H. Benjamin	Professor	PhD	Purdue University
Peng Xianhua	Assistant Professor	PhD	Columbia
Poon Randy Yat Choi	Professor	PhD	University of Cambridge 1994
Qi Robert Zhong	Associate Professor	PhD	University of Calgary 1996
Qian Peiyuan	Professor	PhD	University of Alberta 1991
Qian Tiezheng	Associate Professor	PhD	Institute of Theoretical Physics
Rennberg Reinhard	Professor	PhD	Institute of Biology Berlin
Shao Qi-Man	Professor	PhD	Univ. ST of China
Sou Iam Keong	Professor	PhD	University of Illinois
Sun Jianwei	Assistant Professor	PhD	University of Chicago
Szeto Kwok Yip	Associate Professor	PhD	MIT
Tam Wing Yim	Professor	PhD	California Santa Barbara
Tang Ben Zhong	Professor	PhD	Kyoto University 1988
Tang Zi Kang	Professor	PhD	Tohoku University 1992
Tong Penger	Professor	PhD	University of Pittsburgh 1988
Tsim Karl W. K.	Professor	PhD	University of Cambridge 1987
Wang Jerry H. C.	Adjunct Professor	PhD	Iowa State University 1965
Wang Jiannong	Associate Professor	PhD	University of Bristol 1990
Wang Ning	Professor	PhD	U. ST Beijing
Wang Wenxiong	Professor	PhD	State University of New York
Wang Xiangrong	Professor	PhD	University of Rochester 1990
Wang Xiaoping	Professor	PhD	New York University 1990
Wen Weijia	Professor	PhD	Chinese Academy of Sciences
Wen Zilong	Associate Professor	PhD	Rockefeller University 1997

Williams Ian D.	Professor	PhD	University of Bristol 1983
Wong K. L.	Professor	PhD	California Berkeley
Wong Jeffrey Tze-Fei	Professor	PhD	University of Toronto 1963
Wong Joseph T. Y.	Professor	PhD	University of Stirling 1988
Wong Kam Sing	Associate Professor	PhD	University of Oxford 1987
Wong Man Yu	Associate Professor	PhD	University of London 1990
Wong Michael K. Y.	Professor	PhD	California Los Angeles
Wong Raymond S. C.	Associate Professor	PhD	South Dakota State University
Wong Wan-Keung	Associate Professor	PhD	University of British Columbia
Wong Yuk-Shan	Professor	PhD	McGill University 1979
Wu Hongkai	Assistant Professor	PhD	Harvard
Wu Lixin	Professor	PhD	UCLA
Wu Yundong	Professor	PhD	University of Pittsburgh 1986
Xia Jun	Associate Professor	PhD	The Johns Hopkins University
Xiang Yang	Associate Professor	PhD	New York University 2001
Xie Yong	Adjunct Professor	PhD	Cornell University 1988
Xu Kun	Professor	PhD	Columbia University 1993
Xue Hong	Professor	PhD	University of Toronto 1993
Yan Min	Associate Professor	PhD	University of Chicago 1990
Yan Yijing	Professor	PhD	University of Rochester 1989
Yang Shihe	Professor	PhD	Rice University 1988
Yang Zhiyu	Professor	PhD	Purdue University 1988
Yeung Lam Lung	Associate Professor	PhD	Imperial College 1992
Yu Jianzhen	Associate Professor	PhD	U.of Chapel Hill
Yung Hou	Professor	PhD	University of Cambridge 1988
Zhang Mingjie	Professor	PhD	University of Calgary 1993
Zhang Zhaoqing	Professor	PhD	University of Pennsylvania
Zhenguo	Professor	PhD	University of Western Ontario
Zhu Guang	Associate Professor	PhD	University of Maryland
Zhu Yongchang	Professor	PhD	Yale University 1990

SCHOOL OF BUSINESS AND MANAGEMNT

name	**position**	**qualification**	**university/country**
Adaval Rashmi	Associate Professor	PhD	University of Illinois
Batten Jonathan A.	Adjunct Professor	PhD	The University of Sydney
Beighley Prescott	Adjunct Professor	PhD	Purdue University 1970
Chan Anthony T. K.	Assistant Professor	PhD	University of Michigan 1992
Chann Ka Lok	Professor	PhD	Ohio State University 1990
Chao Melody Manchi	Assistant Professor	PhD	University of Illinois
Chattopadhyay Prithviraj	Professor	PhD	U. Texas at Austin
Chen Kevin C. W.	Professor	PhD	U. of Illinois
Chen Peter F.	Associate Professor	PhD	University of Alberta 1998
Chen Songnian	Professor	PhD	Princeton University 1994
Chen Tai-Yuan	Assistant Professor	PhD	University of Texas at Dallas
Cheng K. H.	Professor	PhD	California Berkeley 1980

Cheung Ki Ling	Associate Professor	PhD	Stanford University 1990
Chew Soo Hong	Professor	PhD	University of British Columbia
Chiang Jeongwen	Adjunct Professor	PhD	University of Minnesota
Choi Darwin	Assistant Professor	PhD	Yale University 2009
Cook David E.	Associate Professor	PhD	U. of Wisconsin Madison
Dalton Amy N.	Assistant Professor	PhD	Duke University
Dasgupta Sudipto	Professor	PhD	U. of Southern California
Dekrey Steve	Adjunct Professor	PhD	University of Iowa 1982
Dias Garvin Percy	Assistant Professor	PhD	Fudan University Shanghai
Ding Fei	Assistant Professor	PhD	Duke University 2007
Du Du	Assistant Professor	PhD	University of Chicago 2007
Duclos Rodolphe T. G.	Assistant Professor	PhD	University of North Carolina
Farch Larry J. L.	Professor	PhD	Indiana University 1983
Galli Maria	Assistant Professor	PhD	INSEAD 2004
Gan Jie	Associate Professor	PhD	MIT
George Elizabeth	Professor	PhD	U. Texas at Austin
Gong Ya-Ping	Associate Professor	PhD	Ohio State University 2002
Gorn Gerald J	Professor Emeritus	PhD	Pennsylvania State University
Goyal Vidhan Krishan	Professor	PhD	University of Pittsburgh 1995
Guo Liang	Associate Professor	PhD	U.of California Berkeley
Ha Albert	Professor	PhD	Stanford University 1992
Harvey Patrick J.	Associate Professor	PhD	U. Southern California 1994
he Jinyu	Assistant Professor	PhD	University of Illinois
Helsen Kristiaan	Associate Professor	PhD	Pennsylvania
Hilary Gilles	Associate Professor	PhD	University of Chicago 2002
Hong Jiewen	Assistant Professor	PhD	Northwestern University
Hsiao Cheng	Adjunct Professor	PhD	Stanford University 1972
Hsieh Chia-Chun	Assistant Professor	PhD	University of British Columbia
Hsu Charles Y.	Assistant Professor	PhD	Prudue University 2004
Hu Inchi	Professor	PhD	Stanford University 1985
Hua Xinyu	Assistant Professor	PhD	Northwestern University 2005
Huang Allen H.	Assistant Professor	PhD	Duke University 2007
Huang Zhi	Assistant Professor	PhD	Boston College
Hui Kai Lung	Associate Professor	PhD	HKUST
Hui Kai Wai	Associate Professor	PhD	University of Oregon 2004
Hulpke John	Adjunct Professor	PhD	U. California Berkeley
Jaisingh Jeevan	Assistant Professor	PhD	Purdue University
James Lancelot F.	Professor	PhD	U. of New York at Buffalo
Ju Nengjiu	Associate Professor	PhD	Michigan State University 1993
Karhade Prasanna	Assistant Professor	PhD	University of Illinois
Kim Kyungmin	Assistant Professor	PhD	Pennsylvania 2009
king Roger	Adjunct Professor	PhD	Hong Kong Univ of Sc & Tech
Kwan Sabrina Y. S.	Associate Professor	PhD	London Business School 1996
Kwok James S. H.	Associate Professor	PhD	University of London 1997
Lai L. C.	Professor	PhD	Stanford University
Lau Ronald	Professor	PhD	University of Alabama 1991
Lemmon Michael	Adjunct Professor	PhD	Utah
Lennox Clive	Associate Professor	PhD	Oxford University 1998
Leung Siu Fai	Professor	PhD	University of Chicago 1987
Li Jiatao	Professor	PhD	University of Texas Dallas

Li Qing	Associate Professor	PhD	University of British Columbia
Li Yao	Assistant Professor	PhD	University of Western Ontario
Li Yingying	Assistant Professor	PhD	The University of Chicago
Lien Yuan-Chuan	Assistant Professor	PhD	Stanford University
Lim Woo Young	Assistant Professor	PhD	University of Pittsburgh
Liu Xiaolei	Assistant Professor	PhD	University of Rochester 2005
Lo Albert Y.	Professor	PhD	U.of California Berkeley
Lu Xun	Assistant Professor	PhD	U.California San Diego
Lu Yang	Assistant Professor	PhD	Boston University
Lui Francis T.	Professor	PhD	University of Minnesota 1985
MacKay Peter Ian	Associate Professor	PhD	Purdue University 1998
Markle Alex B.	Assistant Professor	PhD	University of Chicago
Mukhopadhyay Anirban	Associate Professor	PhD	Columbia University 2004
Muthukrishnan A. V.	Professor	PhD	University of Florida 1993
Nason Emily M.	Assistant Professor	PhD	UCLA
Nason Stephen W.	Associate Professor	PhD	U. Southern California
Ng Angela L. P.	Associate Professor	PhD	Stanford University 1997
Ng Shu Ming	Associate Professor	PhD	Carnegie Mellon University
Ni Sophie X.	Assistant Professor	PhD	University of Illinois 2007
Novoselov Kirill	Assistant Professor	PhD	University of Texas at Austin
Pi Lynn K. F.	Associate Professor	PhD	Georgia State University 1992
Pramaswamy K. P.	Adjunct Professor	PhD	University of Kansas 1993
Rao Milind S.	Associate Professor	PhD	Columbia University 1989
Rapoport Amnon	Adjunct Professor	PhD	University of Northern Carolina
Wyer Robert	Adjunct Professor	PhD	University of Colorado 1962
Salvacruz Joseph	Associate Professor	PhD	University of Kentucky 1993
Seasholes Mark S.	Associate Professor	PhD	Harvard University
Semkow Brian W.	Associate Professor	PhD	Queen's University Kingston
Sen Rik S.	Assistant Professor	PhD	New York University 2009
Sengupta Jaideep	Professor	PhD	UCLA
Shu Jing	Assistant Professor	PhD	University of Minnesota
Shum Stephen W. H.	Assistant Professor	PhD	MIT
Sin Raymond G.	Assistant Professor	PhD	U. Southern California
So Ka Pui	Associate Professor	PhD	University of Hong Kong 1996
Stam Wouter	Assistant Professor	PhD	VU University Amsterdam
Sullivan Bilian	Associate Professor	PhD	Stanford University
Takeuchi Riki	Associate Professor	PhD	University of Maryland
Tam Kar Yan	Professor	PhD	Purdue University
Teh Jack H. H.	Assistant Professor	PhD	University of Nebraska 1990
Thong James Y. L.	Professor	PhD	NUS
Van Der Lans Ralf	Associate Professor	PhD	Tilburg University
Visaria Sujata	Assistant Professor	PhD	Columbia University 2005
Wan Xuhu	Assistant Professor	PhD	U. of Southern California 2005
Wang Heli C.	Associate Professor	PhD	Ohio State University 2002
Wang Peng	Assistant Professor	PhD	New York University 2009
Wang Pengfei	Assistant Professor	PhD	Cornell University 2007
Wang Shiheng	Assistant Professor	PhD	Queen's University 2008
Wang Susheng	Associate Professor	PhD	University of Toronto 1991
Wang Yong	Assistant Professor	PhD	University of Chicago 2009
Wei John K. C.	Professor	PhD	U. of Illinois

Wong Kin Fai Ellick	Associate Professor	PhD	CHKU
Xiang Yi	Assistant Professor	PhD	INSEAD
Xie Danyang	Professor	PhD	University of Chicago
Xu Juanyi	Assistant Professor	PhD	U. of British Columbia 2004
Xu Yan	Associate Professor	PhD	Strathclyde University 1997
You Haifeng	Assistant Professor	PhD	U.California Berkeley 2007
Yu Man	Assistant Professor	PhD	Michigan
Yu Yan	Associate Professor	PhD	Duke University 1999
Zang Amy Y.	Assistant Professor	PhD	Duke University 2006
Zhang Chu	Professor	PhD	University of Chicago 1992
Zhang Guochang	Professor	PhD	University of British Columbia
Zhang Hongtao	Associate Professor	PhD	MIT 1990
Zhang Mingshan	Assistant Professor	PhD	UCLA
Zhang Yong	Assistant Professor	PhD	University of Rochester 2005
Zhao Oliver Yue	Assistant Professor	PhD	University of Alberta 2000
Zhao Ying	Associate Professor	PhD	U. California Berkeley
Zheng Rong	Assistant Professor	PhD	New York University 2009
Zheng Shaohui	Professor	PhD	Columbia University 1994
Zheng Xinghua	Assistant Professor	PhD	The University of Chicago
Zhou Rongrong	Associate Professor	PhD	Columbia University 2001
Zhu Tao	Associate Professor	PhD	The Pennsylvania State U.

SCHOOL OF HUMANITIES & SOCIAL SCIENCE

name	**position**	**qualification**	**university/country**
Cai Yongshun	Associate Professor	PhD	Stanford University 2001
Chan Charles W. H.	Associate Professor	PhD	University of Toronto 1994
Chen Jianhua	Associate Professor	PhD	Fudan University 1988 Harvard University 2002
Chen Li Fen	Associate Professor	PhD	University of Washington 1990
Chen Yun Chung	Assistant Professor	PhD	UCLA
Cheung Siu Woo	Associate Professor	PhD	University of Washington 1996
Cho Hye Jee	Assistant Professor	PhD	UCLA
Chong Kim Chong	Professor	PhD	University of London 1983
David Zweig	Professor	PhD	University of Michigan 1983
Derman Joshua	Assistant Professor	PhD	Princeton University 2008
Ding X. L.	Professor	PhD	Harvard University 1992
Erik Baark	Professor	PhD	University of Lund Sweden
Fu Flora L. T.	Associate Professor	PhD	U. of California Berkeley
Fung Yiu Ming	Professor	PhD	CHKU
Han Li	Assistant Professor	PhD	Harvard 2008
He Wenkai	Assistant Professor	PhD	MIT 2007
Ho Virgil K. Y.	Associate Professor	DPhil	Oxford University 1995
Holz Carsten A.	Professor	PhD	Cornell University 1995
Hung Chang Tai	Professor	PhD	Harvard University 1981
Ku Agnes Shuk-Mei	Associate Professor	PhD	University of California L.A.
Kung James Kai-Sing	Professor	PhD	University of Cambridge 1991

Lee James	Professor	PhD	University of Chicago 1983
Li Bozhong	Professor	PhD	Xiamen University 1985
Lin Yi-Min	Associate Professor	PhD	Yale University 1991
Liu Guanglin	Assistant Professor	PhD	Harvard University 2005
Liu Tik Sang	Associate Professor	PhD	University of Pittsburgh 1995
Lu Zongli	Associate Professor	PhD	U. Wisconsin Madison
Ma Jianxiong	Assistant Professor	PhD	HKUST
Ma John Z.	Associate Professor	PhD	McMaster University 1993
Ng Kenny K. K.	Assistant Professor	PhD	Harvard University 2004
Patchell Gerald R.	Associate Professor	PhD	Simon Frazer University 1991
Sautman Barry	Associate Professor	PhD	Columbia University 1990
Sharif Naubahar	Assistant Professor	PhD	Cornell University 2005
Shimokawa Satoru	Assistant Professor	PhD	Cornell University 2007
Sing Ming	Associate Professor	DPhil	Oxford
So Alvin Y.	Professor	PhD	UCLA
So Billy K. L.	Professor	PhD	Australian University
Sun Jingtao	Associate Professor	PhD	U.of British Columbia
Tam Kevin K. P.	Assistant Professor	PhD	HKU 2006
Tu Jow-Ching	Associate Professor	PhD	University of Tennessee 1983
Wang Jin	Assistant Professor	PhD	London School of Economics
Wang William S. Y.	Adjunct Professor	PhD	University of Michigan 1960 .
Wang Xinyang	Associate Professor	PhD	Yale University 1988
Wong Lisa L. M.	Associate Professor	PhD	HKUST
Wong Simon M. H.	Associate Professor	PhD	University of Toronto 1996
Wong Sin Kwok	Professor	PhD	U. Wisconsin-Madison 1989
Wu Xiaogang	Associate Professor	PhD	UCLA
Yee Angelina C. C.	Professor	PhD	Harvard University
Yik Michelle	Associate Professor	PhD	UBC Psychology
Yip Kam-Ming	Associate Professor	PhD	CHKU
Yiu Carine Y. M.	Assistant Professor	PhD	HKUST
Zhang Min	Associate Professor	PhD	Peking University 1991
Zhu Xiaonong	Associate Professor	PhD	Australian National University
Zhu Yi	Assistant Professor	PhD	Michigan State 2009

INTERDISCIPLINARY PROGRAMS

name	**position**	**qualification**	**university/country**
Barron William F.	Associate Professor	PhD	Johns Hopkins
Chan Chak Keung	Professor	PhD	California IT
Chan Chi Ming	Professor	PhD	California IT
Forster Paul W.	Associate Professor	PhD	University of California Irvine
Fung Jimmy C. H.	Professor	PhD	University of Cambridge 1990
Lau Alexis Kai-Hon	Associate Professor	PhD	Princeton University 1991

SCHOOL OF ENGINEERING

DEPARTMENT OF CHEMICAL AND BIOMOLECULAR ENGINEERING, DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING, DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING, DEPARTMENT OF ELECTRONIC AND COMPUTER ENGINEERING, DEPARTMENT OF INDUSTRIAL ENGINEERING AND LOGISTICS MANAGEMENT, DEPARTMENT OF MECHANICAL ENGINEERING

name	position	qualification	university/country
Arya Sunil	Associate Professor	PhD	Univ of Maryland
Au Emily	Assistant Professor	PhD	HKUST
Au Oscar	Professor	PhD	Princeton
Barford John	Associate Professor	PhD	University of New South Wales
Bensaou Brahim	Associate Professor	PhD	Univ Paris VI
Bermak Amine	Professor	PhD	Paul Sabatier U. Toulouse
Bhargava Vijay K.	Adjunct Professor	PhD	Queen's U. Ontario
Cai Lilong	Professor	PhD	Toronto
Cai Ning	Assistant Professor	PhD	Columbia University 2008
Cai Shujun	Assistant Professor	PhD	University of CaliforniaL.A.
Cao Xiren	Professor	PhD	Harvard University
Chan Chak Keung	Professor	PhD	California
Chan Chi Ming	Professor	PhD	California
Chan Chun-Man	Associate Professor	PhD	University of Waterloo
Chan Mansun	Professor	PhD	Univ of California Berkeley
Chan Shueng-Han Gary	Associate Professor	PhD	Stanford
Chan Tony F.	Professor	PhD	Stanford
Chango Chih-Chen	professor	PhD	Purdue University
ChanYing	Assistant Professor	PhD	MIT
Chao Christopher Y. H.	Professor	PhD	Berkeley
Chen Ching Ho	Professor	PhD	Univ of Illinois
Chen Guohua	Professor	PhD	McGill University 1994
Chen Kevin	Professor	PhD	Maryland
Chen Lei	Assistant Professor	PhD	Waterloo
Cheng Jack C.P.	Assistant Professor	PhD	Stanford University
Cheng Shu-Kwan	Professor	PhD	Princeton
Cheng Siu-Wing	Professor	PhD	Minnesota
Cheung Moe M.S.	Professor	PhD	University of Calgary Canada
Cheung Shing-Chi	Professor	PhD	London
Chin Roland T.	Professor	PhD	Univ of Missouri Columbia
Chung Albert Chi-Shing	Associate Professor	DPhil	Oxford
Ding Cunsheng	Professor	PhD	Turku
Fan Zhiyong	Assistant Professor	PhD.	U. of California Irvine
Fice CEng	Professor	PhD	University of Hong Kong
Fu Qi	Assistant Professor	PhD	HKUST
Fung Pascale	Associate Professor	PhD	Columbia
Gao Furong	Professor	PhD	McGill University 1993
Gao Ongsheng	Associate Professor	PhD	Birmingham
Gao Ping	Professor	PhD	University of Cambridge 1990

Gao Wen	Adjunct Professor	PhD	Tokyo
Ghidaoui Mohamed	Professor	PhD	University of Toronto
Golin Mordecai J.	Professor	PhD	Princeton
Goonetilleke Ravindra S.	Professor	PhD	U. of New York at Buffalo
Gu Lin	Assistant Professor	PhD	Virginia
Hamdi Mounir	Professor	PhD	Pittsburgh
Hong L. Jeff	Associate Professor	PhD	Northwestern University
Horner Andrew B.	Professor	PhD	U. of Illinois
Hsing I Ming	Professor	PhD	MIT 1997
Hu Thomas W.C.	Assistant Professor	PhD	University of South Australia
Hu Xijun	Professor	PhD	University of Queensland 1993
Huang B. L.	Assistant Professor	PhD	Michigan
Huang Ju-Chang Howard	Professor	PhD	University of Texas Austin
Hui Chi Wai	Associate Professor	PhD	University of Manchester 1991
Joneja Ajay	Associate Professor	PhD	Purdue University 1993
Katafygiotis Lambros	Professor	PhD	California
Ki Wing-Hung	Professor	PhD	UCLA
Kikkert Gustaaf	Assistant Professor	PhD	University of Canterbury
Kim Jang-Kyo	Professor	PhD	Sydney
Kim Sunghun	Assistant Professor	PhD	Univ of California Santa Cruz
Ko Edmond	Adjunct Professor	PhD	Stanford University 1980
Ko Ping K.	Professor	PhD	Univ of California Berkeley
Kuang Jun Shang	Professor	PhD	University of Cambridge
Kursun Volkan	Assistant Professor	PhD	U. of Rochester New York
Kwok Hoi Sing	Professor	PhD	Harvard
Kwok James Tin-Yau	Associate Professor	PhD	Hong Kong Univ of Sc & Tech
Kwok Kenny C. S.	Professor	PhD	Monash University
Lam Chuen-Chun	Associate Professor	PhD	U.of Califonia at Santa Barbara
Lam Henry H. N.	Assistant Professor	PhD	MIT
Lam Koon Fung	Assistant Professor	PhD	HKUST
Lataief Khaled	Professor	PhD	Purdue U. Indiana USA
Lau Alexis K.H.	Associate Professor	PhD	Princeton
Lau Arthur P. S.	Assistant Professor	PhD	HKUST
Lau Jack	Adjunct Professor	PhD	Hong Kong Univ of Sc & Tech
Lau Kei May	Professor	PhD	Rice University
Lau Vincent	Professor	PhD	Cambridge
Law Man Kay	Assistant Professor	PhD	HKUST
Lea Chin Tau	Professor	PhD	Univ of Washington
Leborough Neil	Adjunct Professor	PhD	University of Tasmania
Lee Chung-Yee	Professor	PhD	Yale University
Lee Dik-Lun	Professor	PhD	Toronto
Lee Joseph H.W.	Professor	PhD	Massachusetts Inst of Tech
Lee Neville Ka-Shek	Associate Professor	PhD	MIT
Lee Shi-Wei Ricky	Professor	PhD	Purdue
Lee Yi-Kuen	Associate Professor	PhD	UCLA
Leng Yang	Professor	PhD	Virginia
Leung Christopher K.Y.	Professor	PhD	MIT
Leung Wai Ting	Assistant Professor	PhD	Hong Kong Univ of Sc & Tech
Li Bo	Professor	PhD	Massachusetts
Li Xiang-Song	Professor	PhD	U. of California Davis

Li Xin	Assistant Professor	PhD	Hong Kong Univ of Sc & Tech
Li Zexiang	Professor	PhD	Univ of California Berkeley
Li Zongjin	Professor	PhD	Northwestern University
Lin Carol	Assistant Professor	PhD	The University of Manchester
Lin Fangzhen	Professor	PhD	Stanford
Lin Otto	Adjunct Professor	PhD	Columbia University
Lin Otto C.C.	Adjunct Professor	PhD	Columbia University
Liou Ming L.	Professor	PhD	Stanford
Liu Qian	Assistant Professor	PhD	Columbia University 2006
Liu Yunhao	Associate Professor	PhD	Michigan State
Lo Hong K.	Professor	PhD	Ohio State University
Lo Irene M. C.	Professor	PhD	University of Texas-Austin
Lochovsky Frederick H.	Professor	PhD	Toronto
Luo Kathy Q.	Associate Professor	PhD	British Columbia
Luo Qiong	Associate Professor	PhD	Univ of Wisconsin Madison
Luong Howard Cam	Professor	PhD	Univ of California Berkeley
Mac Pherson Emma	Assistant Professor	PhD	Cambridge
Mak Andrew	Associate Professor	PhD	University of London
Mak Brian Kan-Wing	Associate Professor	PhD	Oregon Graduate Inst
Mak Ho Yin	Assistant Professor	PhD	U. of Berkeley 2009
McKay Gordon	Professor	PhD	University of Bradford 1970
McKay Matthew	Assistant Professor	PhD	Univ. of Sydney
Mi Yongli	Professor	PhD	Syracuse University 1991
Mok Philip K.T.	Professor	PhD	Toronto
Mow Wai Ho	Associate Professor	PhD	Chinese Univ. of Hong Kong
Muppala Jogesh K.	Associate Professor	PhD	Duke
Murch Ross D.	Professor	PhD	Univ of Canterbury
Ng Charles W.W.	Professor	PhD	University of Bristol
Ng Ka Ming	Professor	PhD	University of Houston 1980
Ng Wilfred Siu-Hung	Associate Professor	PhD	University of London
Ni Lionel M.	Professor	PhD	Purdue
Paolomar Daniel P.	Associate Professor	PhD	Technical Univ. of Catalonia
Papadias Dimitris	Professor	PhD	National Tech Univ of Athens
Pong Ting-Chuen	Professor	PhD	Virginia Polytech
Poon Andrew Wing-On	Associate Professor	PhD	Yale Univ.
Qi Xiangtong	Associate Professor	PhD	U. of Texas at Austin 2003
Qiu Hui-He	Associate Professor	PhD	Erlangen-Nuremberg
Qiu Li	Professor	PhD	Toronto
Qu Huamin	Associate Professor	PhD	Univ of New York
Qu Jianan	Professor	PhD	Chinese Academy of Sciences
Rossiter David Paul	Assistant Professor	DPhil	Univ of York England
Sander Pedro	Assistant Professor	PhD	Harvard
Shang Chii	Associate Professor	PhD	Purdue University
She James	Assistant Professor	PhD	University of Waterloo
Shen Helen C.	Associate Professor	PhD	Waterloo
Shen Vincent Y. S.	Professor	PhD	Princeton
Shi Bertram	Professor	PhD	Univ of California Berkeley
Shi Ling	Assistant Professor	PhD	California
Shum Chung-Dak	Associate Professor	PhD	UCLA
Shum Harry Heung-Yeung	Adjunct Professor	PhD	Carnegie Mellon

Shyy Wei	Professor	PhD	Michigan
Sin Johnny K. O.	Professor	PhD	Univ of Toronto
So H. Y.	Associate Professor	PhD	U. of Southampton 1995
Sodini Charles	Visiting Professor	PhD	Univ of California Berkeley
Song Shenghui	Assistant Professor	PhD	CityU HK
Sun Qing-Ping	Professor	PhD	Tsinghua
Tang Chi-Keung	Professor	PhD	Southern California
Tang Kai	Associate Professor	PhD	Michigan
Tang Wilson H.	Professor	PhD	Stanford University
Tsang Hin-Kwok	Professor	PhD	Pennsylvania
Tseng Mitchell M.	Professor	PhD	Purdue University
Tsui Chi-Ying	Professor	PhD	Southern California
Tsung Fugee	Professor	PhD	University of Michigan 1997
Tung Yeou-Koung	Professor	PhD	University of Texas Austin
Wang Gang	Assistant Professor	PhD	U.of California Berkeley
Wang Jui-Pin	Assistant Professor	PhD	Columbia U. New York City
Wang Yu-Hsing	Associate Professor	PhD	Georgia Inst. Technology
Wong Chi-Wing	Assistant Professor	PhD	Chinese Univ of Hong Kong
Wong Kai-Sun	Associate Professor	PhD	MIT
Wong Man	Professor	PhD	Stanford
Woo Kam Tim	Assistant Professor	PhD	Hong Kong Univ of Sc & Tech
Wood Derick	Professor	PhD	Leeds
Wu Dekai	Associate Professor	PhD	Univ of California Berkeley
Wu Jingshen	Professor	PhD	Sydney
Wu Po Chi	Adjunct Professor	PhD	Princeton
Yang Hai	Professor	PhD	Kyoto University
Yang Qiang	Professor	PhD	Univ of Maryland
Ye Wenjing	Assistant Professor	PhD	Cornell
Yee Terrence	Associate Professor	PhD	Carnegie Mellon University
Yeung Dit-Yan	Professor	PhD	Southern California
Yeung King Lun	Professor	PhD	University of Notre Dame
Yi Ke	Assistant Professor	PhD	Duke
Yiu-Wing Mai	Professor	PhD	Sydney
Yobas Levent	Assistant Professor	PhD	Case Western Reserve U.
Young David K. K.	Adjunct Professor	PhD	U. of Illinois
Yu Tong-Xi	Professor	PhD	Cambridge
Yu Weichuan	Associate Professor	PhD	University Kiel Germany
Yuan George Jie	Assistant Professor	PhD	Univ. of Pennsylvania
yue Patrick	Visiting professor	PhD	Stanford
Yue Po Lock	Professor Emeritus	PhD	McGill University 1971
Yuen Matthew Ming-Fai	Professor	PhD	Bristol
Zeng Bing	Associate Professor	PhD	Tampere Univ of Tech
Zhang Charles	Assistant Professor	PhD	Toronto
Zhang Jiheng	Assistant Professor	PhD	Georgia Inst. of Tech. 2009
Zhang Jin	Assistant Professor	PhD	Hong Kong Univ of Sc & Tech
Zhang Jun	Assistant Professor	PhD	U. of Texas at Austin
Zhang Limin	Professor	PhD	Sichuan University
Zhang Nevin Lianwen	Professor	PhD	Beijing Normal and British Columbia
Zhang Qian	Professor	PhD	Wuhan

Zhang Tong-Yi	Professor	PhD	U. of Science Beijing
Zhang Xiangru	Associate Professor	PhD	University of Illinois
Zhang Xueqing	Assistant Professor	PhD	University of Alberta
Zhang Ya-Qin	Adjunct Professor	PhD	George Washington
Zhao Feng	Adjunct Professor	PhD	Massachusetts Inst of Tech
Zhao Jidong	Assistant Professor	PhD	Tsinghua
Zhao Tianshou	Professor	PhD	Hawaii
Zhigang	Assistant Professor	PhD	Delaware
Zhou Shelley W.W.	Adjunct Professor	PhD	National Singapore University
Zhou Zhi-Hua	Adjunct Professor	PhD	Nanjing

TABLE A.5.3
THE ACADEMIC WORKFORCE OF THE HONG KONG SHUE YAN UNIVERSITY (SYHKU)

Department of ACCOUNTING

name	position	qualification	university/country
Chak Rosanne	Assistant Professor	PhD	Shanghai University
Chan Francis	Associate Professor	PhD	HKUST
Chen Tien Yiu	Professor & HoD	PhD	HKU
Fung Heidi	Assistant Professor	PhD	HKU
Lee Hua	Assistant Professor	PhD	National Taiwan University
Li Sally	Assistant Professor	PhD	Chinese Academy SS
Lo Shu Sing	Assistant Professor	PhD	University of South Australia
Xie Sabrina	Lecturer	PhD	HKU
Zhou Qiang	Assistant Professor	PhD	CHKU

Department of BUSINESS ADMINISTRATION

name	position	qualification	university/country
Alice Chung	Assistant Professor	PhD	Bulacan State University
Cheng Lee-chuen	Senior Lecturer	PhD	Shanghai University of Finance
Cui Xiling	Lecturer	PhD	CHKU
David Yeung	Research Professor	Ph.D	York University
Kelly Z. Peng	Assistant Professor	PhD	CHKU

Lam Che-fai	Assistant Professor	PhD	Wuhan University
Law Chui-Chui	Assistant Professor	PhD	Hong Kong Polytechnic U.
Law Lai-kuen	Lecturer	PhD	Cardiff University
Millissa Cheung	Assistant Professor	PhD	Hong Kong Polytechnic U.
Naskie Kong	Senior Lecturer	PhD	Chinese Academy of SS
Ricky Szeto	Associate Professor	PhD	U. of Southern Mississippi
Shen Na	Lecturer	PhD	CHKU
Wong Chi-bo	Lecturer	PhD	U. of South Australia
Zhang Jing	Assistant Professor	PhD	University of Wollongong

Department of COUNSELLING AND PSYCHOLOGY

name	**position**	**qualification**	**university/country**
Fu Wai	Assistant Professor	PhD	HKU
Greene Mark	Assistant Professor	PhD	Pacifica Grad. Institute USA
Ho Sin-Wan	Lecturer	PhD	U. of New England Australia
Leung Man	Senior Lecturer	PhD	CHKU
Li Wang-on	Assistant Professor	PhD	HKU
Lo Lap Yan	Lecturer	PhD	HKU
Pang Lan Sze	Senior Lecturer	PhD	Southern Illinois
Seay Thomas A.	Professor	PhD	Southern Illinois University
Sun Tien-lun	Professor	PhD	HKU
Tse Kar Him	Assistant Professor	PhD	Newcastle upon Tyne
Tse Pui-chi	Senior Lecturer	PhD	Duquesne University
Yu Kai-Ching	Associate Professor	PhD	University of Cape Town S.A.

Department of ECONOMICS AND FINANCE

name	**position**	**qualification**	**university/country**
Chu Wan-Ling	Assistant Professor	PhD	Bulacan State University
Hon Tai-Yuen	Part-Time lecturer	PhD	Bulacan State U. Philippines
Lam Cheung	Assistant Professor	PhD	U. of Queensland Australia
Lee Shu-Kam	Associate Professor	PhD	University of Stirling UK.
Li Yi-Man	Lecturer	PhD	HKU
PoonChe-Cheong	Associate Professor	PhD	Bulacan State U. Philippines
Sung Chee-Woo	Professor	PhD	HKU
Tai Hok Man	Part-Time lecturer	PhD	Shanghai University
Wong Fuk-Kin	Assistant Professor	PhD	Bulacan State U. Philippines
Woo Kai-Yin	Assistant Professor	PhD	University of Stirling UK
Yeung Wai Man	Senior Lecturer	PhD	Bulacan State U. Philippines
Yu Fu-Lai	Professor	PhD	University of New South Wales
Yuen Wai-Kee	Assistant Professor	PhD	HKU

Department of ENGLISH

name	position	qualification	university/country
Bindu Bhaskaran Nair	Senior Lecturer	PhD	Jawaharlal Nehru India
Chan Kit Sze	Associate Professor	PhD	CHKU
Chan Wing Chiu	Lecturer	PhD	HKU
Daniel Downes	Associate Professor	PhD	Pacific Western University
Liu Jianwen	Lecturer	PhD	CHKU
LIU Kanglong	Senior Lecturer	PhD	CHKU
Sherman LEE	Assistant Professor	PhD	City University of Hong Kong
Wen Zhisheng	Assistant Professor	PhD	CHKU
Weninger Stephen	Assistant Professor	PhD	Ohio State University
Wong Kin Yuen	Professor	PhD	U. of California San Diego
YAM Pui Suen Josephine	Assistant Professor	PhD	CHKU

department of HISTORY

name	position	qualification	university/country
Chau Chi Fung	Assistant Professor	PhD	Hong Kong Baptist Unversity
Cheung Wai Kwok	Professor	PhD	Peking University
Law Yuk Fun	Senior Lecturer	PhD	HKU
Lo Wing-sang Post	Associate Professor	PhD	HKU
Mo Shixiang	Professor	PhD	HuaZhong Normal University
Shui Lam Danny		PhD	University of Georgia
Wong Kwok-chu	Assistant Professor	PhD	The Australian University

Department of COMMUNICATION AND JOURNALISM

name	position	qualification	university/country
Lam Wun Sum	Senior Lecturer	PhD	Fudan University
Lee Kaman	Assistant Professor	PhD	Renmin University of Chi
Lo Wai Yu Olivine	Senior Lecturer	PhD	CHKU
Ma Wai Kit Will	Senior Lecturer	PhD	HKU
Song Zhao Xun	Associate Professor	PhD	Hong Kong Baptist University
Wong Chung Ming	Assistant Professor	PhD	Jinan University

department of SOCIAL SCIENCE

name	position	qualification	university/country
Au Wing Kwong	Professor	PhD	University of Kent
Chang Sau Han	Professor	PhD	Catholic University of America
Chui Chi Fai	Lecturer	PhD	University of Auckland
Ng Yin Ling	Senior Lecturer	PhD	Cardiff University U.K.

Department of SOCIOLOGY

name	position	qualification	university/country
Chiu Tze Ming	Lecturer	PhD	CHKU
Chwung Siu-keung	Assistant Professor	PhD	The University of Edinburgh
Gao Chong	Assistant Professor	Ph.D	HKU
Ho Yuk Ying	Assistant Professor	PhD	Hong Kong Polytechnic U.
Li Xiu-guo	assistant Professor	PhD	The Hong Kong Polytechnic U.
Liu Shuo	lecturer	PhD	CHKU
Peng Yinni	lecturer	PhD	CHKU
Traver Harold	Professor	PhD	U. of California Santa Barbara
Wan Tak-sing	Lecturer	PhD	The Hong Kong Polytechnic U.

Table 16: indicators and their relative weight of the ARWU		
Criteria	*Indicator*	*Weight*
Quality of education	Alumni of an institution winning Nobel Prizes and Fields Medals	10%
Quality of Faculty	Staff of an Institution winning Nobel Prizes and Fields Medals	20%
	Highly cited researcher in 21 broad subject categories	20%
Research Output	Papers published in Nature and Science (for institutions specialized in humanities and social sciences such as LSE, N&S is not considered)	20%
	Papers indexed in SCI-Expanded and SSCI	20%
Per Capita Performance	Per capita academic performance of an institution	10%
Source: Hazelkorn, 2011		

Table 17: Definition of Indicators (2010 ARWU)
Alumni of an institution winning Nobel Prizes and Fields Medals Indicates the total number of the alumni of an institution winning Nobel Prize in physics, chemistry, medicine and economics and Fields Medals in mathematics. Alumni are defined as those who obtain bachelor, Masters or doctoral degrees from the institution. Different weights are set according to the periods of obtaining degrees. The weight is 100% for alumni obtaining degrees in 1991-2000, 80% for alumni obtaining degrees in 1981-1990, 60% for alumni obtaining degrees in 1971-1980, 40% for alumni obtaining degrees in 1961-1970, and finally 20% for alumni obtaining degrees in 1951-1960. If a person obtains more than one degree from an institution, the institution is considered once only. Nobel Laureates in Physiology or Medicine are used in both LIFE and MED ranking.
Staff of an Institution winning Nobel Prizes and Fields Medals Indicates the total number of the staff of an institution winning Nobel Prizes in physics, chemistry, medicine and economics and Fields Medals in mathematics. Staff is defined as those who work at an institution at the time of winning the prize. Different weights are set according to the periods of winning the prizes. The weight is 100% for winners in 2001-2009, 80% for winners in 1991-2000, 60% for winners in 1981-1990, 40% for winners in 1971-1980, and finally 20% for winners in 1961-1970. If a winner is affiliated with more than one institution, each institution is assigned the reciprocal of the number of institutions. For Nobel Prizes, if a prize is shared by more than one person, weights are set for winners

according to their proportion of the prize. Nobel Laureates in Physiology or Medicine are used in both LIFE and MED ranking.

Highly cited researcher in 21 broad subject categories

Indicates the number of highly cited researchers in twenty subject categories defined and provided by isihighlycited.com. These highly cited researchers are assigned to five broad subject fields. If a researcher is listed in more than one subject category, his/her weight for each category is the reciprocal of the number of categories listed. Specifically, researchers who are listed in Social Science, General Category are checked one by one, and they are reclassified into three groups according to their affiliation colleges/departments. People worked at health-related units such as medical schools, schools of public health and schools of nursing are grouped for MED ranking, people affiliated to Psychology/Psychiatry departments are not considered for the ranking, other individuals in this category are totalled for SOC ranking.

Papers published in Nature and Science

Indicates the total number of papers indexed by Science Citation Index-Expanded and Social Science Citation Index in 2008 and 2009. Only publications of 'Article' and 'Proceedings Paper' types are considered. Each paper published by an institution is assigned into one of the six broad subject fields according to journals the paper was published in (Classification of Journal Categories), including above-mentioned five broad subject fields and Interdisciplinary and Multidisciplinary Sciences. If a paper is published in a multi-assigned journal (which is assigned to more than one ISI category), it is divided into related groups.

Papers indexed in SCI-Expanded and SSCI

Indicates the percentage of papers published in the top 20% journals of each broad subject field. Top 20% journals are defined as their impact factors in the top 20% of each ISI category according to Journal Citation Report, 2009. Papers in the top journals of each ISI category are then aggregated into the six broad subject fields and the TOP is calculated as the number of papers in the top 20% journals of a particular broad subject field to that in all journals of the field. A threshold was set for the minimum number of papers in each broad subject field for calculating TOP indicator. The threshold was defined as 10% of the average number of papers by the top three institutions in each broad subject field. If the threshold of a particular field is less than 100, then 100 is used. If the number of papers of an institution does not meet the minimum threshold, the TOP indicator is not calculated for the institution and its weight is relocated to other indicators. Only publications of 'Article' and 'Proceedings Paper' types are considered.

Per capita academic performance of an institution

Indicates the total engineering-related research expenditures in 2009. This indicator is only

used for ENG ranking. If the data for all institutions of a country cannot be obtained, the Fund indicator will not be considered for the institutions and its weight will be relocated to other indicators.
Source: arwu.org/ARWUFieldMethodology2010.jsp

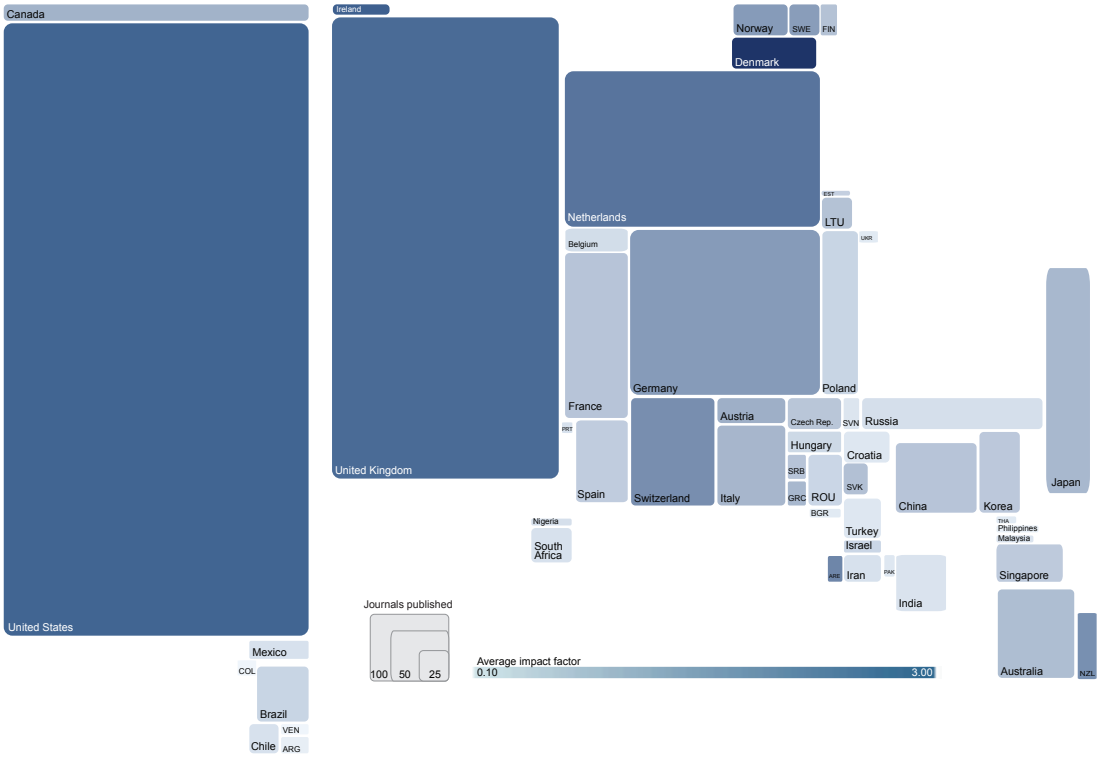

Figure 20: journal published in relation to their impact factor and location

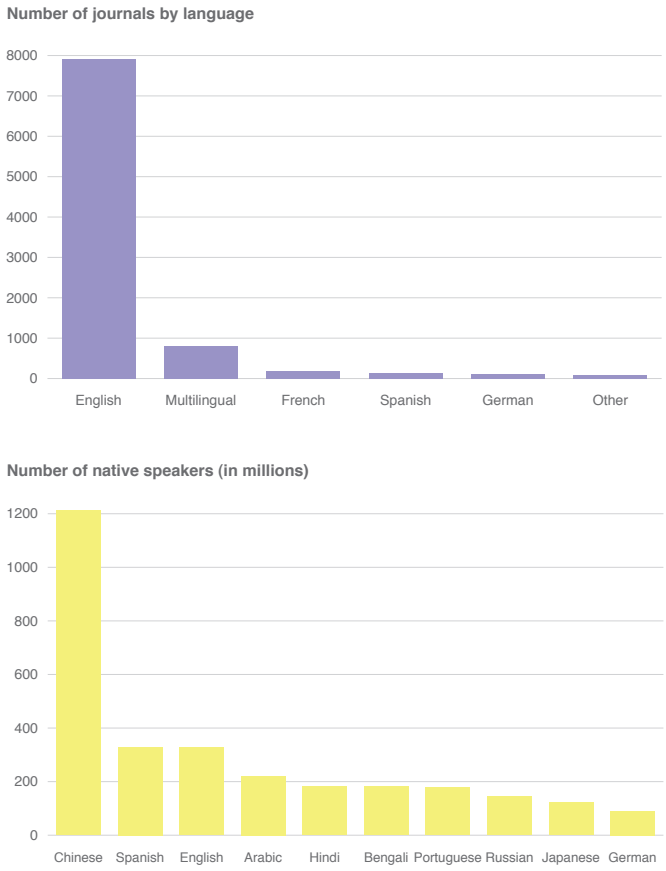

Figure 21: Number of scientific journals published by language

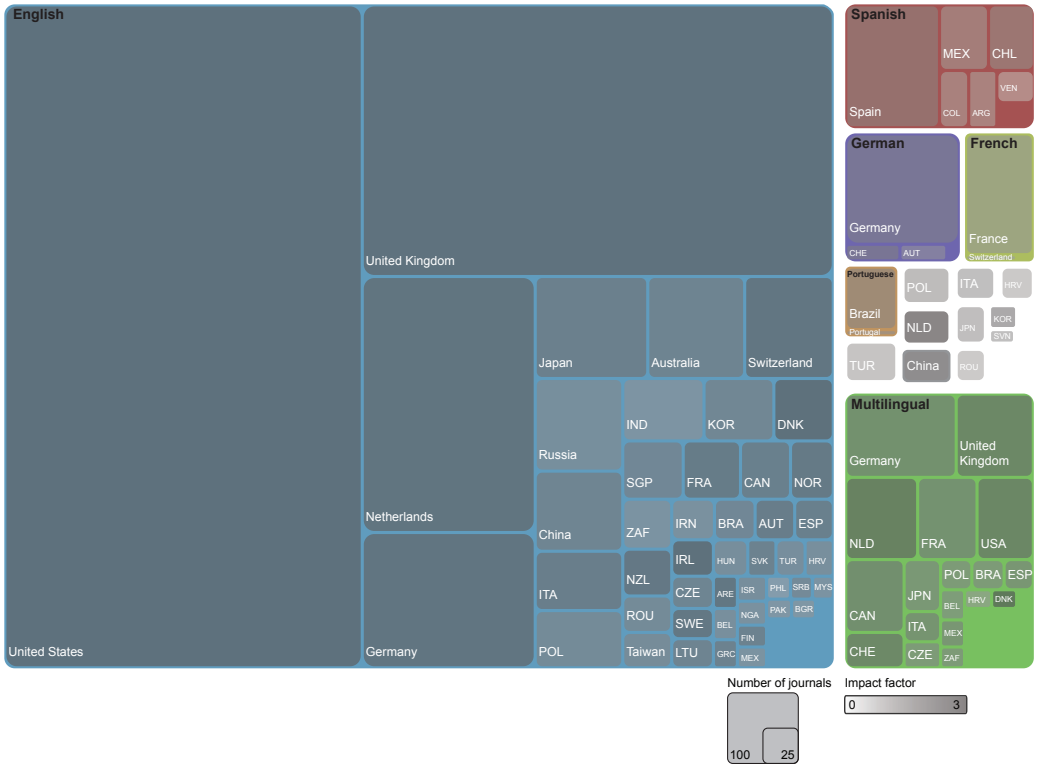

Figure 22: Number of journal published in relation to their impact factor, language and location

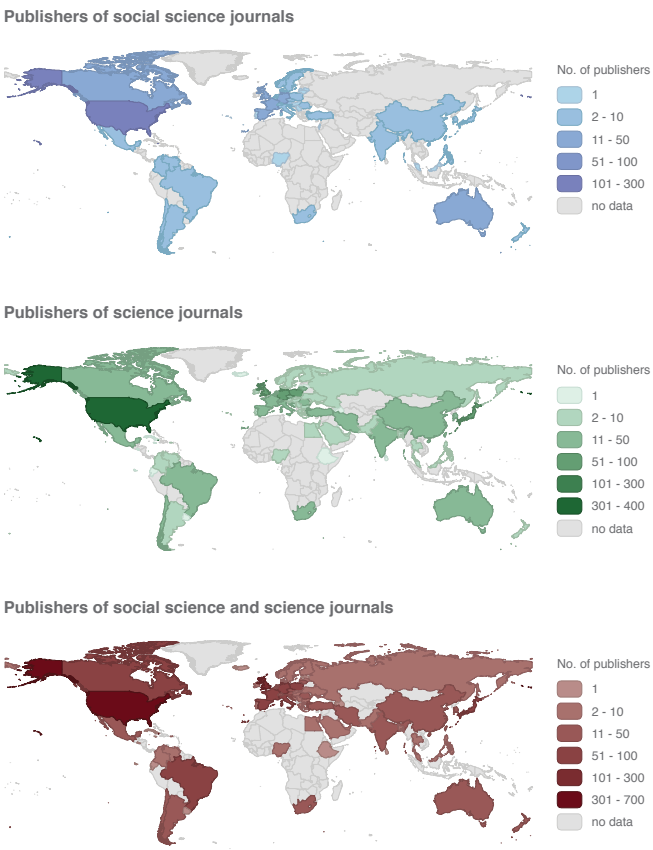

Figure 23: Number and location of publisher of scientific knowledge worldwide according to the JCR of the Thomson Reuters

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